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ANNUAL REVIEW 1983

OF ALBERTA FISH AND WILDLIFE DIVISION

for Alberta Fish and Game Association
Edmonton, February 23-25, 1984

Alberta
ENERGY AND
NATURAL RESOURCES
Fish and Wildlife Division

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1. INTRODUCTION

Three major division director positions were filled in 1983. Robert Andrews was appointed as the Director of Wildlife; Tom Mill was appointed as the Director of Fisheries; and Ken Ambrock was appointed as the Director of Habitat Protection.

All three of these individuals bring a wealth of experience and management skill to this division and it is anticipated that each will plan a major role in contributing to the future of fish and wildlife management in Alberta.

Following government approval of the Fish and Wildlife Policy for Alberta in 1982, a series of major initiatives are underway to implement the approved policy.

The first initiative relates to the development of a new Wildlife Act. In order to seek public views on some of the major policy issues to be addressed by this new Wildlife Act, a Discussion Paper has been presented to the public for review and comment. It is hoped that a draft bill will be available on the new Wildlife Act in time for the 1984 spring session of the legislature.

A second major area of endeavor is the interpretation of various sections of the Fish and Wildlife Policy for Alberta. Although a considerable number of specific policies are in preparation, two have been released to the Fish and Wildlife Advisory Council for review and

comment. The two policies in question are the Outfitting Policy for Non-Resident Sheep Hunting and the Policy on the Disposition of Orphaned, Injured, or Sick Wildlife.

A third major initiative evolving from the approved Fish and Wildlife Policy for Alberta deals with the preparation of a report on the Status of Fish and Wildlife in Alberta. This document attempts to identify goals relating to public benefits associated with each species of fish and wildlife, species populations needed to achieve stated levels of public benefit, and the habitat requirements necessary to provide the fish and wildlife populations involved. A draft of this document has been provided to the Fish and Wildlife Advisory Council for review and comment.

Members of the public are encouraged to participate in the development of each of these major policy matters in order that the long-term interests of Alberta's fish and wildlife resources and the citizens who benefit from these resources are reflected in future policy and programs of this division.

2. PROGRAM SUPPORT

2.1 Special Licence and Authorization Draws

A primary concern of the Fish and Wildlife Division is ensuring maximum recreational opportunities while protecting wildlife populations from severe decline and maintaining viable populations. The special licence and authorization draws continue to be an important means for limiting and controlling access in areas where hunting seasons would otherwise have to be closed.

Each year biological surveys and management studies are conducted to determine the species and the areas where more intensive management is needed. Once the areas are established and approved by legislation, information about the special licences and authorization draws is prepared for all Fish and Wildlife district offices. In 1983 this material was also distributed to Woodward's ticket outlets as well as to Alberta Fish and Game plus a limited number of private vendors in remote areas. Advertisements were placed in all daily and weekly newspapers to advise when draws were open. Applicants were allowed four to six weeks to submit their applications, depending on which species they were applying for. As in previous years, however, applicants tended to mail their entries during the last few days, which accounts for the delay in processing the selected applicants. If applications were submitted earlier, the draws could be processed earlier.

There were nine authorization draws and seven licence draws in 1983. The difference between an authorization and a licence is that an authorization by itself does not give authority to hunt but gives the holder an additional opportunity for using a general licence in a specified wildlife management unit (WMU). A special licence permits the hunting of a particular species only in a specific WMU during a declared season. A special licence can be obtained only by draw and requires a fee for each application. An authorization is free, although the general licence for validating the authorization must be purchased. A metal tag for an authorized kill is issued with the purchase of a general licence and with each special licence.

Applicants for a draw submit their applications in the envelopes provided, indicating their wildlife certificate number, the WMU or area in which they wish to hunt and the species for which they are applying. As the envelopes are received by Fish and Wildlife in its Data Control Unit they are number stamped, date stamped and coded according to the species being applied for. All future reference is now by envelope number only and not by names or wildlife certificate numbers. The envelopes are then sent to Data Conversion where the wildlife certificate number(s), area choice(s) and species code are keyed. All keyed data is checked and corrected.

The envelopes are also verified to determine whether, contrary to regulations, an applicant applied for more than two authorization draws or more than once for the same draw. In 1983, 286 applications were rejected because of this infraction.

When all the envelopes are keyed for the first deadline date, the selection process begins, which is generated by a random seed number provided by the Alberta Fish and Game Association.

Each draw is processed one species at a time in order of its season opening date. Selections are made initially on a first-choice basis. If after selecting the applicants by first choice for each area there remains an unfilled quota, the computer program will consider the second and then third choices of previously unsuccessful applicants until the quotas are filled.

An applicant's chance for being selected is based on the number of applicants in an area and the number of allotted permits. If many apply for a small number of permits the successful ratios will be low, whereas if few apply in an area where many permits are available the success ratio will be high. Table 1 gives a summary by species for the success rates of applicants in the 1983 draws; for success rates by wildlife management unit or area, see tables 3 to 17 at the end of this section.

When the computer selection is complete the computer lists all successful applicants in envelope number order. The envelopes and applications are then verified for accuracy. If all criteria are met, an authorization is computer printed or, if it is a licence draw, a licence issued. In addition, all unsuccessful envelopes are returned to the applicant at the same time as the successful applicants are notified.

Table 1

1983 SPECIAL HUNTING LICENCES AND AUTHORIZATION DRAWS SUMMARY

Species	Licences Available		Number of Applicants		Success Rate (%)	
	1982	1983	1982	1983	1982	1983
Goat	42	46	489	624	9.2	7.3
Non-trophy Sheep	1,022	1,327	1,727	1,874	46.8	54.5
Cypress Hills Elk	100	100	3,977	3,257	2.5	3.2
Camp Wainwright Deer	770	770	1,591	1,870	48.3	40.0
Trophy Antelope	2,155	2,755	4,603	6,428	38.5	42.8
Non-trophy Antelope	2,000	2,300	1,941	1,860	81.4	87.6
F300 Elk	600	700	2,660	2,920	22.5	24.0
Subtotal	6,689	7,998	17,988	18,833	35.6	37.05
Antlerless Elk	3,725	3,130	19,731	16,786	18.9	18.6
Antlerless Mule Deer	5,100	7,680	11,776	9,742	43.3	73.0
Male Mule Deer	1,175	1,375	2,835	2,395	41.4	57.5
Antlerless white-Tailed	5,030	5,565	8,376	6,496	56.4	73.7
Male White-Tailed Deer	450	450	242	163	100	100
Antlerless Moose	1,770	2,286	23,508	22,252	7.5	10.2
Male Moose	4,545	4,663	12,311	10,355	36.9	45.1
Fall Grizzly Bear	--	21	--	656	--	3.2
Spring Grizzly Bear	Not available					
Subtotal	24,315	25,170	80,604	68,845	50.55	47.66
Total	31,004	33,177	98,592	104,323	43.07	42.35

NOTE: Tables 3 - 17 list success rates by wildlife management unit or area.

Applicants in 1983 were notified of their status well before their season opening date (see table 2).

Table 2

DATES APPLICANTS NOTIFIED

Species	Date Mailed	Season Opening
Non-Trophy Sheep	July 25	September 5
F300 Elk	July 21	September 7
Fall Grizzly Bear	July 22	September 14
Mountain Goat	August 5	September 19
Antlerless Elk	July 29	September 21
Male White-Tailed Deer	July 27	September 28
Antlerless White-Tailed Deer	August 5	September 28
Antlerless Mule Deer	August 11	September 28
Male Mule Deer	August 18	September 28
Antlerless Moose	August 23	September 28
Male Moose	August 26	September 28
Trophy Antelope	September 7	October 24
Cypress Hills Elk	September 1	October 25
Non-Trophy Antelope	September 12	October 26
Camp Wainwright Deer	September 19	November 28

Three significant changes were made in the 1983 draws:

1. Applicants were restricted to applying for a maximum of two authorization draws.
2. Male elk was changed from an authorization season to a general season.
3. A fall grizzly bear authorization was introduced.

In total, 74,336 envelopes were received in 1983 compared with 82,867 in 1982. This represented 40,786 hunters, an increase of 5,417 over last year. This indicates that while the total number of applications is being reduced, because of the first change listed above, the draws themselves are being used by a greater number of individuals each year.

The division will continue to review the special draw systems with respect to ensuring both maximum hunter benefit and resource allocation.

2.2 General Licence Sales for 1983/84

Total licence sales for 1983/84 are not yet available; however, the following list indicates the number of sales ending June 30, 1983 for wildlife certificates and game stamps.

Wildlife Certificates	162,573
Resident Bird Game	87,728
Resident General Moose	63,971
Resident General Elk	33,036
Resident General White-Tailed Deer	77,442
Resident General Mule Deer	59,969
Resident Sheep	2,863
Resident Grizzly Bear	964
Resident Black Bear	14,878
Resident Cougar	121
Resident Bowhunting	6,691
Resident Trappers	5,067
Duplicate Stamps	1,663
Non-Res. Bird Game	3,011
Non-Res. General Male Moose	217
Non-Res. General Male Elk	121
Non-Res. General Male White-Tailed Deer	166
Non-Res. General Male Mule Deer	223
Non-Res. Can. Grizzly Bear	---
Non-Res. Can. Black Bear	57
Non-Res. Can. Cougar	1
Non-Res. Can. Wolf	2
Non-Res. Can. Bowhunting	12
Non-Res. Alien Bird Game	900
Non-Res. Alien General Male Moose	590
Non-Res. Alien Zone One Male Moose	427
Non-Res. Alien General Male Elk	175
Non-Res. Alien General Male White-Tailed Deer	215
Non-Res. Alien General Male Mule Deer	158
Non-Res. Alien Grizzly Bear	29
Non-Res. Alien Black Bear	422
Non-Res. Alien Cougar	3
Non-Res. Alien Wolf	30
Non-Res. Alien Bowhunting	47

Table 3

1983 MOUNTAIN GOAT APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
A	5	122	5	0	0	5 (4.0)
B	5	189	5	0	0	5 (2.6)
C	5	99	5	0	0	5 (5.0)
D	5	33	5	0	0	5 (15.1)
E	11	120	11	0	0	11 (9.1)
F	15	61	15	0	0	15 (24.5)
Total	46	624	46	0	0	46 (7.3)

Table 4

1983 NON-TROPHY SHEEP APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
A400	0	0	0	0	0	0 (0.0)
A402	25	140	25	0	0	25 (7.8)
A404	40	124	41	0	0	41 (33.0)
A406	40	54	40	0	0	40 (74.0)
A408	25	55	24	1	0	25 (45.4)
A418	26	32	26	0	0	26 (81.2)
A422	58	58	58	0	0	58 (100.0)
A434	65	51	34	7	10	51 (100.0)
B400	0	0	0	0	0	0 (0.0)
B404	40	55	41	0	0	41 (74.5)
B406	50	71	50	0	0	50 (70.4)
B408	60	96	60	0	0	60 (62.5)
B418	20	27	21	0	0	21 (77.7)
B422	5	15	5	0	0	5 (33.3)
B434	21	27	21	0	0	21 (77.7)
C418	5	41	5	0	0	5 (12.1)
F306	15	55	15	0	0	15 (27.2)
F308	15	119	15	0	0	15 (12.6)
F328	4	37	4	0	0	4 (10.8)
S410	50	170	50	0	0	50 (29.4)
S412	25	51	26	0	0	26 (50.9)
S420	137	90	65	13	12	90 (100.0)
S428	8	19	8	0	0	8 (42.1)
S430	83	48	20	16	12	48 (100.0)
S432	83	33	23	5	5	33 (100.0)
S436	10	22	12	0	0	12 (54.5)
S438	75	162	75	0	0	75 (46.2)
S439	1	17	1	0	0	1 (5.8)
S440	70	99	71	0	0	71 (71.7)
S441	1	1	0	1	0	1 (100.0)
S442	150	41	24	14	3	41 (100.0)
S444	90	46	34	12	0	46 (100.0)
S445	30	18	18	0	0	18 (100.0)

Table 3

1983 MOUNTAIN GOAT APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
A	5	122	5	0	0	5 (4.0)
B	5	189	5	0	0	5 (2.6)
C	5	99	5	0	0	5 (5.0)
D	5	33	5	0	0	5 (15.1)
E	11	120	11	0	0	11 (9.1)
F	15	61	15	0	0	15 (24.5)
Total	46	624	46	0	0	46 (7.3)

Table 4

1983 NON-TROPHY SHEEP APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
A400	0	0	0	0	0	0 (0.0)
A402	25	140	25	0	0	25 (7.8)
A404	40	124	41	0	0	41 (33.0)
A406	40	54	40	0	0	40 (74.0)
A408	25	55	24	1	0	25 (45.4)
A418	26	32	26	0	0	26 (81.2)
A422	58	58	58	0	0	58 (100.0)
A434	65	51	34	7	10	51 (100.0)
B400	0	0	0	0	0	0 (0.0)
B404	40	55	41	0	0	41 (74.5)
B406	50	71	50	0	0	50 (70.4)
B408	60	96	60	0	0	60 (62.5)
B418	20	27	21	0	0	21 (77.7)
B422	5	15	5	0	0	5 (33.3)
B434	21	27	21	0	0	21 (77.7)
C418	5	41	5	0	0	5 (12.1)
F306	15	55	15	0	0	15 (27.2)
F308	15	119	15	0	0	15 (12.6)
F328	4	37	4	0	0	4 (10.8)
S410	50	170	50	0	0	50 (29.4)
S412	25	51	26	0	0	26 (50.9)
S420	137	90	65	13	12	90 (100.0)
S428	8	19	8	0	0	8 (42.1)
S430	83	48	20	16	12	48 (100.0)
S432	83	33	23	5	5	33 (100.0)
S436	10	22	12	0	0	12 (54.5)
S438	75	162	75	0	0	75 (46.2)
S439	1	17	1	0	0	1 (5.8)
S440	70	99	71	0	0	71 (71.7)
S441	1	1	0	1	0	1 (100.0)
S442	150	41	24	14	3	41 (100.0)
S444	90	46	34	12	0	46 (100.0)
S445	30	18	18	0	0	18 (100.0)

Table 4 (continued)

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % SUCCESSFUL
S446	0	0	0	0	0	0 (0.0)
Total	1,327	1,874	912	69	42	1,023 (54.5)

Table 5

1983 CYPRESS HILLS ELK APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % SUCCESSFUL
N01	25	561	26	0	0	26 (4.6)
N08	25	334	26	0	0	26 (7.7)
N15	25	477	26	0	0	26 (5.4)
025	25	1,885	27	0	0	27 (1.4)
Total	100	3,257	105	0	0	105 (3.2)

Table 6

1983 CAMP WAINWRIGHT DEER APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
D01	130	712	130	0	0	130 (18.2)
D05	130	390	130	0	0	130 (33.3)
D08	130	305	130	0	0	130 (42.6)
D12	130	234	130	0	0	130 (55.5)
N28	250	229	220	3	6	229 (100.0
Total	770	1,870	740	3	6	749 (40.0)

Table 7

1983 TROPHY ANTELOPE APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
A	400	575	400	0	0	400 (69.5)
B	410	762	410	0	0	410 (53.8)
C	315	705	315	0	0	315 (44.6)
D	70	207	71	0	0	71 (34.2)
E	400	741	400	0	0	400 (53.9)
F	560	1,303	560	0	0	560 (42.9)
G	600	2,135	600	0	0	600 (28.1)
Total	2,755	6,428	2,756	0	0	2,756 (42.8)

Table 8

1983 NON-TROPHY ANTELOPE APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
A	400	131	129	1	1	131 (100.0)
B	150	136	104	23	9	136 (100.0)
C	100	179	102	0	0	102 (56.9)
D	50	58	52	0	0	52 (89.6)
E	400	264	205	52	7	264 (100.0)
F	600	345	286	45	14	345 (100.0)
G	600	747	600	0	0	600 (80.3)
Total	2,300	1,860	1,478	121	31	1,630 (87.6)

Table 9

1983 F300 ELK APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
J04	300	1,640	301	0	0	301 (18.3)
N02	200	894	200	0	0	200 (22.3)
S07	200	386	200	0	0	200 (51.8)
Total	700	2,920	701	0	0	701 (24.0)

Table 10

1983 ANTLERLESS ELK APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & Successful
F302	150	591	150	0	0	150 (25.3)
F304	260	1,894	260	0	0	260 (13.7)
F306	100	336	100	0	0	100 (29.7)
F308	200	1,495	200	0	0	200 (13.3)
F310	250	397	250	0	0	250 (62.9)
F312	300	650	300	0	0	300 (46.1)
F340	20	1,540	20	0	0	20 (1.2)
F342	20	309	20	0	0	20 (6.4)
F344	20	588	20	0	0	20 (3.4)
F346	30	1,485	30	0	0	30 (2.0)
F352	20	541	20	0	0	20 (3.6)
F354	100	578	100	0	0	100 (17.3)
F356	100	818	100	0	0	100 (12.2)
F358	100	789	100	0	0	100 (12.6)
S400	170	997	170	0	0	170 (17.0)
S402	400	1,671	400	0	0	400 (23.9)
S404	290	691	293	0	0	293 (42.4)
S406	400	899	401	0	0	401 (44.6)
S408	200	517	200	0	0	200 (38.6)
Total	3,130	16,786	3,134	0	0	3,134 (18.6)

Table 11

1983 ANTLERLESS MULE DEER APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
F300	100	112	100	0	0	100 (89.2)
F302	500	298	224	43	31	298 (100.0)
F304	900	1,161	900	0	0	900 (77.5)
F306	150	160	150	0	0	150 (93.7)
F308	300	362	240	60	0	300 (82.8)
F310	150	159	136	14	0	150 (94.3)
F312	350	281	222	26	33	281 (100.0)
G102	150	154	143	7	0	150 (97.4)
G104	200	141	127	12	2	141 (100.0)
G106	75	81	43	27	5	75 (92.5)
G108	250	327	250	0	0	250 (76.4)
G110	75	71	59	11	1	71 (100.0)
G112	20	28	20	0	0	20 (71.4)
G114	60	87	61	0	0	61 (70.1)
G116	100	125	100	0	0	100 (80.0)
G118	125	95	65	10	20	95 (100.0)
G119	100	128	100	0	0	100 (78.1)
G124	50	64	50	0	0	50 (78.1)
G126	75	63	38	9	16	63 (100.0)
G128	75	113	76	0	0	76 (67.2)
G130	50	40	33	7	0	40 (100.0)
G132	200	79	61	10	8	79 (100.0)
G136	75	80	70	5	0	75 (93.7)
G138	25	19	17	2	0	19 (100.0)
G140	50	22	13	7	2	22 (100.0)
G142	50	28	24	4	0	28 (100.0)
G144	30	18	14	1	3	18 (100.0)
G148	150	283	150	0	0	150 (53.0)
G150	300	361	298	2	0	300 (83.1)
G152	200	283	200	0	0	200 (70.6)
G156	175	310	175	0	0	175 (56.4)
G158	200	248	200	0	0	200 (80.6)
G160	300	466	300	0	0	300 (64.3)

(continued on next page)

Table 11 (continued)

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
G162	550	578	550	0	0	550 (95.1)
G164	225	244	198	27	0	225 (92.2)
G166	150	238	151	0	0	151 (63.4)
P200	150	244	150	0	0	150 (61.4)
P202	150	387	150	0	0	150 (38.7)
P208	200	407	202	0	0	202 (49.6)
P210	150	336	150	0	0	150 (44.6)
P232	25	141	25	0	0	25 (17.7)
P234	50	209	50	0	0	50 (23.9)
S400	50	106	52	0	0	52 (49.0)
S402	50	193	50	0	0	50 (25.9)
S404	50	82	50	0	0	50 (60.9)
S406	250	251	250	0	0	250 (99.6)
S408	20	79	20	0	0	20 (25.3)
Total	7,680	9,742	6,707	284	121	7,112 (73.0)

Table 12

1983 MALE MULE DEER APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
G102	150	478	150	0	0	150 (31.3)
G104	200	526	200	0	0	200 (38.0)
G106	75	80	75	0	0	75 (93.7)
G108	200	467	200	0	0	200 (42.8)
S404	200	237	202	0	0	202 (85.2)
S406	500	533	501	0	0	501 (93.9)
S408	50	74	50	0	0	50 (67.5)
Total	1,375	2,395	1,378	0	0	1,378 (57.5)

Table 13

1983 ANTLERLESS WHITE-TAILED DEER APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
F300	100	103	100	0	0	100 (97.0)
F302	200	104	97	3	4	104 (100.0)
F304	175	198	175	0	0	175 (88.3)
F306	50	39	35	3	1	39 (100.0)
F308	100	75	64	8	3	75 (100.0)
F310	10[illegible]	76	62	7	7	76 (100.0)
F312	350	157	140	6	11	157 (100.0)
F334	100	226	100	0	0	100 (44.2)
F336	150	416	150	0	0	150 (36.0)
G102	125	100	95	5	0	100 (100.0)
G104	125	77	74	3	0	77 (100.0)
G106	100	26	22	3	1	26 (100.0)
G108	350	357	350	0	0	350 (98.0)
G110	100	100	98	1	1	100 (100.0)
G112	30	40	30	0	0	30 (75.0)
G114	40	53	40	0	0	40 (75.4)
G116	225	187	166	12	9	187 (100.0)
G118	75	34	30	2	2	34 (100.0)
G119	175	184	154	21	0	175 (95.1)
G124	25	31	24	1	0	25 (80.6)
G126	30	32	27	3	0	30 (93.7)
G128	100	104	98	2	0	100 (96.1)
G130	50	39	33	3	3	39 (100.0)
G132	150	73	56	11	6	73 (100.0)
G136	50	47	35	9	3	47 (100.0)
G138	15	3	1	1	1	3 (100.0)
G140	75	43	32	8	3	43 (100.0)
G142	75	44	41	3	0	44 (100.0)
G144	25	8	8	0	0	8 (100.0)
G148	150	214	150	0	0	150 (70.0)
G156	75	265	75	0	0	75 (28.3)
G158	100	120	100	0	0	100 (83.3)
P210	100	198	100	0	0	100 (50.5)

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Table 13 (continued)

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
P214	100	117	91	9	0	100 (85.4)
P216	150	162	149	1	0	150 (92.5)
P220	400	415	358	25	17	400 (93.3)
P221	125	127	125	0	0	125 (98.4)
P222	150	164	118	26	6	150 (91.4)
P224	250	256	250	0	0	250 (97.6)
P226	100	152	100	0	0	100 (65.7)
P240	100	223	100	0	0	100 (44.8)
P242	100	436	100	0	0	100 (22.9)
P246	50	176	50	0	0	50 (28.4)
P250	100	244	100	0	0	100 (40.9)
S400	50	35	32	2	1	35 (100.0)
S402	50	48	45	3	0	48 (100.0)
S404	30	34	23	4	3	30 (88.2)
S406	100	109	100	0	0	100 (91.7)
S408	20	25	20	0	0	20 (80.0)
Total	5,565	6,496	4,523	185	82	4,790 (73.7)

Table 14

1983 MALE WHITE-TAILED DEER APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
S404	100	24	24	0	0	24 (100.0)
S406	300	108	107	1	0	108 (100.0)
S408	50	31	31	0	0	31 (100.0)
Total	450	163	162	1	0	163 (100.0)

Table 15

1983 ANTLERLESS MOOSE APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
F300	6	90	6	0	0	6 (6.6)
F302	40	265	40	0	0	40 (15.0)
F304	175	1,596	175	0	0	175 (10.9)
F306	50	277	50	0	0	50 (18.0)
F308	200	1,250	200	0	0	200 (16.0)
F310	100	349	100	0	0	100 (28.6)
F312	300	439	300	0	0	300 (68.3)
F314	35	634	36	0	0	36 (5.6)
F320	50	631	50	0	0	50 (7.9)
F322	20	130	20	0	0	20 (15.3)
F324	50	758	50	0	0	50 (6.5)
F326	20	310	20	0	0	20 (6.4)
F328	30	419	30	0	0	30 (7.1)
F330	20	298	20	0	0	20 (6.7)
F332	50	946	50	0	0	50 (5.2)
F337	10	340	10	0	0	10 (2.9)
F338	10	626	10	0	0	10 (1.5)
F340	40	743	40	0	0	40 (5.3)
F342	25	193	25	0	0	25 (12.9)
F344	25	359	25	0	0	25 (6.9)
F346	150	1,612	150	0	0	150 (9.3)
F348	50	670	50	0	0	50 (7.4)
F350	200	2,766	200	0	0	200 (7.2)
F352	25	592	25	0	0	25 (4.2)
M500	10	149	10	0	0	10 (6.7)
M504	50	607	50	0	0	50 (8.2)
M506	20	471	20	0	0	20 (4.2)
M510	75	1,117	75	0	0	75 (6.7)
M513	50	378	50	0	0	50 (13.2)
P216	30	368	30	0	0	30 (8.1)
S400	30	768	30	0	0	30 (3.9)
S402	30	776	30	0	0	30 (3.8)
S404	50	283	50	0	0	50 (17.6)

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Table 15 (continued)

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
S406	225	686	225	0	0	225 (32.7)
S408	5	80	5	0	0	5 (6.2)
S429	30	276	30	0	0	30 (10.8)
Total	2,286	22,252	2,287	0	0	2,287 (10.2)

Table 16

1983 MALE MOOSE APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
F300	28	76	28	0	0	28 (36.8)
F302	220	315	168	53	0	221 (70.1)
F304	450	875	450	0	0	450 (51.4)
F306	120	146	120	0	0	120 (82.1)
F308	300	948	300	0	0	300 (31.6)
F310	200	307	178	22	0	200 (65.1)
F312	500	500	278	132	90	500 (100.0)
F314	125	387	125	0	0	125 (32.2)
F320	50	398	52	0	0	52 (13.0)
F322	40	154	40	0	0	40 (25.9)
F332	400	908	400	0	0	400 (44.0)
F334	50	119	50	0	0	50 (42.0)
F337	150	328	151	0	0	151 (46.0)
F338	675	699	675	0	0	675 (96.5)
M500	50	144	51	0	0	51 (35.4)
M504	100	578	100	0	0	100 (17.3)
M506	50	610	50	0	0	50 (8.1)
M508	100	323	100	0	0	100 (30.9)
P216	75	190	76	0	0	76 (40.0)
P224	50	141	50	0	0	50 (35.4)
P246	10	28	11	0	0	11 (39.2)
S400	200	605	200	0	0	200 (33.0)
S402	250	609	250	0	0	250 (41.0)
S404	150	255	151	0	0	151 (59.2)
S406	300	643	300	0	0	300 (46.6)
S408	20	69	20	0	0	20 (28.9)
Total	4,663	10,355	4,374	207	90	4,671 (45.1)

Table 17

1983 FALL GRIZZLY BEAR APPLICANTS

Zones Available	Licences Available	Applicants	1st Choice	2nd Choice	3rd Choice	Number & % Successful
F356	4	216	4	0	0	4 (1.8)
F357	3	37	3	0	0	3 (8.1)
M526	4	32	4	0	0	4 (12.5)
S440	1	169	1	0	0	1 (0.5)
S441	1	1	1	0	0	1 (100.0)
S442	2	133	2	0	0	2 (1.5)
S444	2	32	2	0	0	2 (6.2)
S445	2	17	2	0	0	2 (11.7)
S446	2	19	2	0	0	2 (10.5)
Total	21	656	21	0	0	21 (3.2)

3. WILDLIFE MANAGEMENT

In late 1983 a number of adjustments were made in the Wildlife Management Branch.

The branch is now composed of four sections: Administration; Game Management; Fur Management and Technical Services; and Brooks Wildlife Centre. The Game Management Section is divided into three units: Ungulate Management; Waterfowl and Upland Bird Management; and Carnivore Management. Four units make up the Fur Management and Technical Services Section: Fur and Non-Game Management; Habitat Management and Land Use Planning; Wildlife Resource Inventory; and Research and Laboratory Services. The Brooks Wildlife Centre is composed of three units: Hatchery/Broodstock; Rearing; and Inventory/Maintenance.

The programs outlined in the following section are delivered through this new organizational framework.

3.1 Big Game Management

White-tailed Deer

White-tailed deer continue to be the most popular big game species with Alberta hunters. More than 77,000 licences were sold to white-tail hunters in 1982/83. Deer were plentiful in the prairies, foothills and aspen parkland areas of the province. White-tail numbers were maintained on the northern limit of their range in the farmland of the Peace River and St. Paul areas because of the moderate winter conditions of the past year. The animals survive on an annual basis in these northern areas; severe winters can result in widespread die-offs. Conversely, white-tails are quick to respond to favorable winters with high reproductive rates. They not only can increase in number very rapidly but can extend their range in a short period of time.

Mule Deer

The recent mild winters of the southern prairies have been beneficial to mule deer populations. Mule deer have become very abundant, thus allowing for an increase in the number of authorizations issued for antlerless animals. Nearly 60,000 Albertans purchased general licences to hunt mule deer, and success rates were good in most areas where the species thrives. A limited entry hunt in wildlife management units G102-G108 was responsible for the production of some excellent trophy heads.

Generally, mule deer numbers have declined in latitudes north of Edmonton. This has been attributed to intensified agricultural practices and perhaps to competition with white-tailed deer.

Moose

Moose populations continued to decline in the northern part of the province due to a combination of hunting, parasitism by winter ticks and predation by wolves and bears. Initial hunter responses indicate that hunter success was slightly poorer than in 1981/82 in spite of a reduction in the number of antlerless permits that were issued.

Southern moose ranges are highly productive and, in the absence of predators and the winter tick, moose populations have expanded dramatically. Further controls, such as a limited entry hunt for both sexes in the south, ensures the survival of adequate stock to maintain populations from year to year.

Moose is still the most abundant species in the province and nearly 64,000 resident hunters attempted to bag one. Moose are also quite popular with non-resident hunters; this in turn supports many guiding and outfitting businesses.

Since moose are larger than deer, they are affected less by deep snows and harsh winter conditions. The major impact on northern moose populations has been due to the winter tick. However, tick survival was poor in the spring of 1982 because of lingering snow cover. It is

anticipated that this mortality will reduce the tick loads the animals will be carrying this winter.

Elk

Elk populations have been increasing in the province over the past several years and, in particular, in the foothills areas south of the Bow River. Hunting pressure has been high north of the Bow River, largely because of good access. The result has been a decline in large trophy bulls. An elk transplant was carried out in the Blackstone area in an attempt to reverse this trend. As well, a trophy restriction was put on all elk hunted in Willmore Wilderness Park in order to increase the number of adult males.

Depredation of crops by elk south of High River and near Pincher Creek and Waterton Provincial Park continues to be a problem.

Pronghorn Antelope

The status of pronghorns in Alberta is generally unchanged from 1981. Populations are high (approximately 21,000 animals) due to a series of mild winters throughout the southern prairies. Since pronghorns exist along the northern limit of their range in Alberta, winter climate is extremely important in the survival of this species.

Mature bucks were common this past year, and many fine trophy animals were taken by Alberta hunters during the 1982 season. Hunting success was approximately 80 percent for both trophy and non-trophy animals.

Mountain Goats

Total goat numbers in Alberta stand at about 2,000 animals. Sixty percent of these animals are found in the mountainous country north of Highway 16, 13 percent between Highways 1 and 16, and 18 percent west of Calgary. There is some uncertainty about the goat population south of Highway 3. About 180 animals occupied this area but recent surveys have found fewer of them. It is not known at this time if these animals have moved from their former range or if there is a connection between the goats and the bighorn sheep die-off in the area. Reproduction of goats in this area was determined to be 28 kids per 100 ewes, which is lower than previous surveys.

The only area that has any goat hunting in the province is Willmore Wilderness Park. Forty-two special goat permits were issued in 1982, and 23 goats were harvested for a hunter success rate of 55 percent.

Bighorn Sheep

Surveys in 1981/82 of bighorn sheep winter ranges in Alberta reported a sizable increase in numbers. Estimates now are placed at 6,000 bighorn on provincial land and another 4,000 in the national parks. A series of mild winters has undoubtedly contributed to the increase. A major die-off of sheep has occurred in southern Alberta since 1982 (see part 3.9, Research and Laboratory Services).

In 1982, 2,862 trophy sheep licences and an additional 91 non-resident and non-resident alien licences were sold. A total of 236 trophy sheep was registered (83 percent by residents). The number of non-trophy sheep permits issued in 1982 (792) was almost double that of 1981. The total kill of non-trophy sheep was estimated from hunter questionnaire returns at 270 animals.

3.2 Bird Game Management

Waterfowl

Following another spring of below-normal runoff, May pond numbers, habitat conditions and the number of breeding ducks in 1983 were again well below the long-term average. Spring rains, which came too late to be of value to waterfowl seeking suitable nesting areas, did contribute somewhat by helping to replenish water levels in the semipermanent and permanent wetlands.

The 1983 fall flight, while much below that enjoyed during 1969-1976, was comparable to the five preceding drought-reduced seasons. Hunting conditions varied throughout the province during the fall, which extended into November in the southern parts of the province. Overall, hunting opportunity and harvest were little different from 1979-1982 seasons. The 1983 season marked the end of the final year of the Prairie Harvest Management Program, an agreement which provided for fixed or stabilized duck regulations over a five-year period.

Alberta's breeding population of large Canada geese was also affected by dry spring conditions, especially in the south where some former nesting islands remained high and dry or separated from the mainland by only shallow water. Breeding pair surveys indicated that the population growth experienced in recent years has now stabilized, due in large part to saturation of the available breeding habitat. Gosling surveys on major nesting lakes and the southern rivers showed

production to be better than in 1982 but slightly lower than the average experienced in former years. Northern production of Arctic-nesting snow, white-fronted and lesser Canada geese was average or above, with the southward migration a little earlier than normal in most parts of the province. Very dry fall conditions in the major east-central staging area again resulted in a filtering through rather than any build-up or major concentrations.

Nearly 1,600 resident Canada geese in southern Alberta were drive-trapped and banded. In addition, almost 500 goslings with adults were banded during the transplant program and most were moved on to several habitat improvement projects in the central part of the province.

A final draft of a management plan for the Rocky Mountain population of large Canada geese (whose nesting range extends into south-central and central Alberta) has been completed in co-operation with researchers of the Pacific and central flyways. Also nearing completion for the Pacific flyway are management plans for trumpeter swans, Ross geese and snow geese. Final drafts of co-operative management plans for hi-line and short grass prairie Canada geese and western white-fronted geese have now been completed for the central flyway populations.

In co-operation with Elk Island National Park, an experimental pilot project to introduce trumpeter swans into the park was conducted in 1983. A total of 16 cygnets, successfully reared from eggs collected from the Grande Prairie population, was bonded to three foster-parent

adults winter-trapped at Powell River, B.C. The three "family groups" were released on three lakes inside the park during late August and early September and were monitored up to freeze-up by means of small radio transmitters attached to plastic neck collars.

A final draft of the National Waterfowl Management Plan for Canada, developed co-operatively by the Canadian Wildlife Service and the 10 provinces, has gone through public comment and is being revised. A provincial plan for Alberta waterfowl populations will receive final review early in 1984. The Canadian strategies and principles will also be completed early in 1984 in preparation for joint discussions with the United States regarding an international waterfowl plan.

Upland Game Birds

Pheasants. Despite the mild winter of 1982/83, wild ring-necked pheasant populations declined from spring 1982 levels, as indicated by crowing counts conducted in spring 1983. This decline can be largely attributed to poor production in summer 1982. In contrast, favorable weather during peak hatch this summer contributed to good production in 1983. The relatively large fall populations in southern Alberta were evident during the hunting season as wild birds composed 74 percent of all pheasants checked as compared with only 59 percent of pheasants checked during the 1982 hunting season. As well, hunters averaged 0.95 birds per hunter checked as opposed to 0.84 birds per hunter in 1982.

In 1983, 102,591 pheasants were distributed from the Brooks Wildlife Centre; 37,732 as day-old or six-week-old chicks to co-operative raisers, and 64,859 as mature birds to the wild. As in the past years, pheasant chicks were distributed in order to educate raisers, primarily rural Albertans, about the needs of pheasants and other wildlife and to promote the retention and development of wildlife habitat on privately-owned lands (for a further breakdown of numbers of raisers and clubs, see part 3.10 Brooks Wildlife Centre). The mature birds (16 weeks of age and older) were released throughout southern and central Alberta in order to provide additional hunting and viewing opportunities, to provide incentives for landowners to maintain cover and to supplement local populations. Of the 64,859 birds released, approximately 15 percent were released as incentives for landowners or to provide additional opportunities for pheasants to be seen. Most pheasants were released in order to give hunters additional opportunities for hunting. In particular, 4,100 pheasants, mostly males, were released in the Edmonton and St. Paul areas throughout the season, four times the number of birds released in these areas in 1982.

In 1983 and 1984, several projects involving pheasants will be continued or initiated. Currently, two field projects involving movements, habitat use and mortality rates of pheasants are being conducted. One study involving released pheasants is taking place near Millet in central Alberta while the other study, involving both wild and pen-reared birds, is being conducted near Brooks in southern Alberta. The impact of the pheasant raise-and- release program on both

raiser attitudes and wildlife cover will be evaluated in 1984. Surveys, including hunter check stations, will again be conducted in selected areas in order to monitor population fluctuations and hunter success. These surveys include the evaluation of wetlands (important pheasant winter cover) associated with irrigation districts in southern Alberta.

A pilot put-take pheasant hunting program will be developed, particularly in areas close (within one to one-and-one-half hours drive) to urban areas. More release sites will be identified and the mechanics of this program will be developed in 1984.

Sage Grouse. In spring 1983, numbers of sage grouse on strutting grounds in southern Alberta had declined somewhat from 1981, although not as low as in 1975. Poor weather during nesting and hatching times may be a major factor in sage grouse population fluctuation in Alberta. Human disturbance on or near strutting grounds that are easily accessible may also be a factor in the decline. During the 1983 season, 57 hunters who had taken 45 grouse were checked at check stations. Total harvest in 1983 is estimated to be fewer than 100 grouse.

Sharp-tailed Grouse. In 1983, both spring and fall populations were generally higher than in 1982, partially as a result of favorable weather during winter and hatching periods. During the Camp Wainwright grouse season, 208 hunters harvested 310 sharp-tails (1.5 per hunter) during the one-week season. Of these birds, the adult to juvenile

ratio was 1:2.3, an increase over the 1:1.6 adult to juvenile ratio recorded in 1982.

Hungarian Partridge. Fall populations in partridge were higher in 1983 than in previous years, partially as a result of mild weather during the winter and favorable weather during the hatch. Hunters reported good success for partridge, particularly in southern Alberta.

Ruffed Grouse. Other than the Camp Wainwright hunt, no surveys are currently conducted on ruffed grouse. Generally, ruffed grouse populations are in the low part of the 10-year population cycle. During the 1983 Camp Wainwright hunt, only 42 ruffed grouse were shot. This is less than one-quarter of the number taken in the Camp in 1980.

Turkeys. The wild turkey populations in the Porcupine Hills and Cypress Hills were surveyed in 1983. Division staff are in the preliminary stages of developing a management plan for turkeys. The possibility of opening a limited spring hunt for males only is being investigated.

Bird Game Hunter Questionnaire

Late in 1983 a questionnaire was distributed to hunters in order to update data on hunter effort, species hunted, harvest, areas hunted and other aspects of bird hunting in Alberta. This survey, once completed, will provide the Wildlife Branch with information needed for sound management of game birds.

3.3 Carnivore Management

In co-operation with the Energy and Natural Resources Public Affairs Branch and the Bureau of Public Affairs, publication of the manual Prevention and Control of Wildlife Damage in Alberta was completed during 1983. The manual provides instructions to divisional and Alberta Agriculture personnel as to approved materials and techniques in handling problem wildlife complaints.

A preliminary wolf management plan and a review of district officer observations of wolf numbers and complaints during 1982 were prepared in early 1983 in response to hunter, trapper and rancher complaints. As part of the recommendations in the plan, several programs were instituted during the year. First, a long-term study of wolf predation on elk and moose was initiated in the Nordegg area; during the year one wolf and several elk were radio-collared and monitored, and several hundred wolf scats were collected and analyses are underway. Secondly, a review report of wolf-ungulate predation in North America was completed. Thirdly, a University of Calgary graduate program in wolf management in western North America was sponsored. Also, a report summarizing effectiveness of wolf control on remote cattle pastures (Simonette River) was completed, as was a report on Trichinella in grizzly bear and cougar.

Fish and Wildlife personnel continued to monitor the level of rabies infection in free-ranging skunk and bat populations. A total of 265 skunks was collected during Fish and Wildlife field programs in 1983;

10 skunks (3.8 percent) were rabid. Biometric, parasitologic and forensic data were collected from 46 skunk carcasses. In addition, 225 bats of various species were collected throughout the province and submitted for rabies testing. None were rabid.

A program was directed toward estimating the abundance of skunks within the rabies-endemic area south and east of Lethbridge, in Warner County. A systematic trapping program was conducted with emphasis on equal trapping in two separate study areas and within two habitat types in each area. This program was successful and will be repeated in 1984. In two other areas night-lighting surveys were conducted weekly from July to November and a survey of ground dens was conducted. One hundred and fifty-one dens were located and marked. These will be checked during the winter and spring for evidence of use by skunks. The total population of skunks denned in the two areas will be estimated by removal trapping.

Efforts were also directed toward increasing awareness about the rabies control program and the biology of skunks and bats in Alberta. This was accomplished through scientific publications, seminars and presentations at two international meetings.

3.4 Furbearer Management

The revenue from wild furs produced in Alberta declined 22 percent from 1981/82 to 1982/83, from $9.8 million to $7.6 million. This revenue decrease reflects a maior decline in muskrat harvests and a lesser decline in lynx production, as well as notable declines in pelt prices for beaver, mink, muskrat, coyote and red fox. However, partial offsets resulted from production and/or price increases for badger, fisher, marten and wolf. Hence, the industry remained fairly healthy overall in 1982/83, and the same trend is expected for 1983/84. (For a summary of 1982/83 revenues, see table 18.)

Beaver remain abundant and coyotes plentiful, particularly in farming regions, whereas the red squirrel appears to have increased. The cyclic decline in lynx numbers is continuing. The lynx season has been shortened this year, as studies have shown that trapping mortality can add to natural mortality during the cyclic decline and low. Therefore, careful management of lynx is required for the next two to three years. The fisher population is also declining from a recent peak and requires careful monitoring as well; pelts are in high demand, although less so than the extremely valuable lynx.

Enrolment in the trapper education program reached an all-time high in 1982/83, presumably reflecting a healthy wild-fur industry. A total of 469 trapper-students attended 22 courses (21 one-week courses and one four-week course). However, enrolment may be even higher in 1983/84, as a record number of courses has been scheduled (27). In response to

Table 18

ALBERTA 1982/83 FUR PRODUCTION REVENUES

	No. of Pelts	Average Price of Pelt ($)	Total Value ($)
Badger	1,580	37.77	59,676.60
Beaver	54,054	17.59	950,809.86
Bobcat	50	219.26	10,963.00
Coyote	37,447	58.63	2,195,517.61
Ermine/Weasel	10,827	2.14	23,169.78
Fisher	5,055	126.56	639,760.80
Fox (Silver)	151	44.66	6,743.66
Fox (Cross)	800	87.68	70,144.00
Fox (White)	20	29.95	599.00
Fox (Red)	2,513	44.04	110,672.52
Lynx	8,315	280.16	2,329,530.40
Marten	10,640	41.77	444,432.80
Mink	9,585	26.12	250,360.20
Muskrat	81,985	2.54	208,241.90
Otter	272	44.81	12,188.32
Raccoon	49	21.88	1,072.12
Skunk	62	5.00	310.00
Squirrel	144,877	1.34	194,135.18
Wolf	611	95.62	58,423.82
Wolverine	103	174.72	17,996.16
Black Bear	218	58.29	12,707.22
Total			7,597,454.95

NOTE: Number of registered trappers, 2,972. Number of resident trappers, 5,067.

public concerns over high wolf numbers and the goal of increasing trapper harvests of wolves to the maximum sustainable, the division provided special workshops on wolf trapping at 11 locations during 1982/83. As an added incentive, nearly 5,000 wolf snares were provided free to trappers attending trapper education courses. Wolf trapping workshops have so far been provided at two locations in 1983/84.

Draft policy guidelines on the Trapper Compensation Program have been completed. The guidelines detail comprehensive approaches to compensation for (1) loss of livelihood, (2) short-term loss of revenue due to damages caused by the conventional oil and gas industry, (3) inconvenience, (4) damage to equipment and assets, and (5) vandalism, theft and arson caused by unknown parties. Most payments from the fund are for vandalism, theft and arson, and most livelihood damages to trappers are caused by industries other than conventional oil and gas. However, the program recognizes that other industries are relatively stationary and operate for long periods in a given area, so there is ample opportunity to negotiate compensation directly between trapper and industry. This is in contrast to the conventional oil and gas industry, which may move quickly over a number of trapping areas and often operates through contractors. In any event, the Trapper Compensation Review Board does review disputes between trappers and logging or heavy oil industries, for example, and recommends settlements on livelihood issues. Trappers aggrieved by industrial development should contact the Trapline Resource Officer nearest them (Rocky Mountain House, St. Paul, Peace River).

Studies on river otter have continued and are now in their final year.

Field testing of new humane traps is also continuing in 1983/84 with the co-operation of trapper volunteers. During 1982/83 the field testing program placed 250 traps of 14 different designs with 21 trappers in five different ecological regions of Alberta. Although a number of devices show good promise, considerable work in humane trapping research, development and implementation remains to be done by the newly incorporated Fur Institute of Canada. The institute, which is funded by governments as well as private sectors involved in the fur industry, will co-ordinate Canada-wide development and implementation of humane trapping systems, and public education on the value and importance of wild fur resources. The institute will also assist trap inventors.

A comprehensive review of the wild fur industry has been undertaken to ensure appropriate implementation of the Fish and Wildlife Policy for Alberta which was approved in fall 1982. A preliminary draft position paper has been completed; a subsequent policy paper will receive thorough review and discussion by the public concerned.

3.5 Non-game Management

Peregrine Falcon

The peregrine falcon recovery program continued successfully in 1983.

The efforts of the captive breeding program at Wainwright were again aimed at producing young for release to the wild and supplementing wild nest production. Fifty young were produced at the Canadian Wildlife Service Wainwright raptor facility and an additional five young were raised under contract for the division at the Black Diamond facility. Nineteen of the young produced were released in Alberta.

The pair from Edmonton returned to the Alberta Government Telephones Toll Building for the third consecutive year. This year they laid four eggs of which three hatched and were successfully raised by the adults. Thousands of Edmontonians watched their progress on a closed-circuit television monitor in the lobby of the building.

A pair of birds was located at the AGT Toll building in Calgary this spring to become the second pair to nest in Alberta's cities. Both adults were originally captive-reared chicks, one released at the Red Deer River and one at Edmonton. They laid three eggs, which unfortunately did not hatch; however, they accepted two foster young which were successfully raised.

Two release sites in central Alberta received 10 young, of which eight are thought to have successfully left the areas involved.

The remnant peregrine population in northern Alberta had better success than in 1982 with six pairs again being located. This year four pairs produced seven young in addition to fostering five captive-reared young from Wainwright.

Swift Fox

In co-operation with the Canadian Wildlife Service a swift fox reintroduction program was initiated this year. Twenty-five foxes were released this fall in southeastern Alberta; 15 of them were radio-collared so that their movements could be monitored. This is the first attempt at reintroducing an extirpated wildlife species into Alberta.

Ferruginous Hawk

A study on the effectiveness of artificial pole nesting structures for prairie raptors has been carried out in the Sheerness area south of Hanna since 1981. The purpose of the study is to determine the best method of using the structures to augment natural nesting locations. It will also provide expanded nesting opportunities for populations of raptors, especially the ferruginous hawk, on reclaimed lands after strip mining or other similar activities have been completed.

Bald Eagle

In conjunction with the University of Montana the division again

provided funds and logistical support to track radio-tagged migrating bald eagles as they moved north from Montana and through Alberta during the spring.

Valuable information was gained on the timing and patterns of migration through the province as well as on nesting activity during the summer. This is the last year of a three-year program.

Osprey

With the development of the Brazeau hydro dam a number of ospreys have established territories in the dead trees along the south shore of the reservoir. In 1983 a high of 14 nesting attempts was recorded. The security of this population has been threatened by the rotten and unstable condition of the nesting trees. To combat this the division, through the Buck for Wildlife program and in co-operation with TransAlta Utilities, successfully dropped seven nesting platforms on top of 36-foot poles from a helicopter so that they landed upright in shallow water. As ospreys have been found to accept artificial structures readily elsewhere in North America, maintenance of this population should be assured even with the disappearance of natural nest sites.

Falconry

Falconry continued to be a high profile program during 1983. New regulations are currently being drafted that will simplify procedures

and increase the accessibility of birds to licensed falconers or propagators. This year four falconry permits and two falconry propagation permits were issued.

3.6 Habitat Management

Wetlands for Tomorrow

The Wetlands for Tomorrow program, initiated in 1982, is a joint wetland conservation and development program between Ducks Unlimited (Canada) and the Alberta government. Over the next 10 years, 20 wetlands throughout the province will be developed to enhance, create and protect productive waterfowl habitat. Some of the notable wetlands include Beaverhill Lake, Buffalo-Spotted lakes, Buffalo Bay/Horse Lake, Vauxhall marshes, Kleskun Lake, Peace-Athabasca Delta, Whitford-Rush lakes and Tyrrell-Rush lakes. This year considerable progress has been made on Kleskun and Tyrrell-Rush lakes. Land negotiations have been initiated at Kleskun Lake near Grande Prairie. Tyrrell-Rush lakes located southeast of Lethbridge, is also scheduled for construction in 1984. Major planning studies have been initiated on Buffalo Bay/Horse Lake and Whitford-Rush lakes.

Buck for Wildlife

For 1983/84 approximately $600,000 has been allocated to 31 Buck for Wildlife projects. Six of these projects are new, the balance are on-going.

Two noteworthy projects during this year are Shiningbank and Buffalo Bay/Horse Lake.

The Shininghank moose range will be enhanced by an extensive clearing program. In co-operation with the Alberta Forest Service and the forest industry, a deciduous timber (aspen) harvesting program, providing benefits to the industry and habitat enhancement for moose, will be implemented over the next several years.

Buffalo Bay/Horse Lake is a new project located at the west end of Lesser Slave Lake. A major multidisciplinary planning study has been initiated and involves many agencies, including Ducks Unlimited, Alberta Environment, Alberta Agriculture and Alberta Energy and Natural Resources. A conceptual plan which proposes the compartmentalization of this wetland area will yield considerable benefits to waterfowl, wildlife in general and agriculture. The Buck for Wildlife program is funding a muskrat study from which furbearer management strategies can be incorporated into the wetland compartments.

As in previous years the goose bale program continues to be a success. Reports from the southern region indicate that upwards of 65 percent utilization by Canada geese occurs in some of the better sites around Brooks. In addition, each year there appears to be more involvement by various fish and game clubs. This year it is anticipated that 17 fish and game clubs and one community club will be involved.

Table 19 summarizes the active Buck for Wildlife projects initiated in the 1983/84 program year.

Table 19

1983/84 BUCK FOR WILDLIFE PROJECTS

Region	Project	Target Species	1983/84 Budget ($)	Status	Development Activities
Southern	Abandoned Railways	Multiple	6,050	New	Habitat maintenance & protection
	Eight Mile Lake	Pheasants & Waterfowl	5,600	New	Habitat improvement & protection plan
	McVinnie Property	Pheasants & Waterfowl	6,310	On-going	Wetland development-winter escape cover
	Millicent	Pheasants & Waterfowl	1,255	On-going	Feasibility of wetland development
	Mt. Bluebird Trails	Bluebirds	2,800	On-going	Construction and installation of nest boxes
	Porcupine Hills	Moose	20,000	On-going	Completion of feasibility and design studies of habitat enhancement (clearing)
	Scandia Ranch	Multiple	700	On-going	Feasibility & design of wetland development
	Shelterbelt Maintenance	Multiple	1,850	On-going	Maintenance of tree planting sites
	Stirling Lake	aterfowl	9,350	On-going	Improve water supply canal & water payment
	Stonehill Lake	Waterfowl	5,800	On-going	Maintenance of water supply canal
	Vauxhall Marsh	Waterfowl	1,500	New	Bait station operation
	Walsh Flats	Antelope	17,950	On-going	Completion of habitat management assessment

(continued on next page)

Table 19 (continued)

Region	Project	Target Species	1983/84 Budget ($)	Status	Development Activities
Central	Bigelow Reservoir	Multiple	573	On-going	Maintenance
	Buffalo Lake	Multiple	844	On-going	Maintenance
	Dickson Dam	Multiple	200	New	Habitat development (tree planting)
	Red Deer Habitat	Multiple	62,880	On-going	Habitat protection on private land
	Namaka Lake	Multiple	9,119	On-going	Habitat enhancement (food plots, cover crops, plantings)
	Slack Slough	Waterfowl	48,737	On-going	Island maintenance, bait station operation, development of public parking, area trail & observation viewpoint
Northeast	Athabasca Elk Intercept	Elk	9,900	On-going	Establishment of foraging areas for elk
	Assessment and Development F&W Purchased Lands	Multiple	15,000	New	Development habitat management plan for five potential projects
	Lychak Property	Multiple	27,455	On-going	Habitat protection and enhancement
	Rochester Habitat Management Area	Moose	22,965	On-going	Completion of habitat maintenance and enhancement plan
	Whitford Lake	Waterfowl	5,000	New	Habitat enhancement (nest cover establishment)

(continued on next page)

Table 19 (continued)

Region	Project	Target Species	1983/84 Budget ($)	Status	Development Activities
East Slopes	Athabasca Ranch	Elk	21,300	On-going	Habitat maintenance, monitoring and improvement (fertilization) Investigate potential for control burn
	Brazeau Osprey	Osprey	5,000	On-going	Joint project with Transalta utilities to construct nest platforms
	Chip Lake	Multiple	21,650	On-going	Habitat maintenance & protection Preparation of habitat management plans for lands purchased for project
	Elk Winter Range Improvement	Elk	20,830	On-going	Complete study to identify treatment sites and method of enhancement
	Shiningbank	Moose	38,000	On-going	Habitat enhancement (clearing) & monitoring
Peace River	Birch Hills	Moose	35,865	On-going	Evaluation of mechanical clearing to increase browse production & moose utilization
	Buffalo Bay/ Horse Lake	Multiple	50,000	New	Muskrat inventory to facilitate waterfowl enhancement plan
Provincial	Goose Bales	Canada Geese	20,150	On-going	Installation of bales for nesting Via fish & game clubs & other groups
	Administration	N/A	82,760	N/A	Supplies, wages, services, rentals

3.7 Population Inventory

Population data (relative species abundance, distribution and composition) provided by aerial inventories forms the basic framework for species management strategies. During the 1983 calendar year, excluding December, the provincial inventory program used 888 aircraft hours to obtain data on a wide variety of wildlife species. For categorized species totals see table 20.

Table 20

AIRCRAFT HOURS FOR PROVINCIAL POPULATION INVENTORY PROGRAM

Mode	Big Game									Bird Game		Fur	Non-Game	Land Use Assessment/ Planning	Total
	Moose	Deer	Caribou	Elk	Antelope	Sheep	Goat	Unqulate	Grizzly	Migratory	Upland				
Rotary-Wing	92.0	28.8	21.0	75.1	-	48.5	31.3	60.3	13.4	2.7	-	-	13.2	35.7	422.0
Fixed-Wing	43.8	28.2	99.5	11.4	11.4	-	-	-	-	43.9	12.0	99.2	92.0	23.7	466.0
Total	135.8	57.0	120.5	86.5	11.4	48.5	31.3	60.3	13.4	46.6	12.0	99.2	106.1	59.4	888.0

NOTE: 1983 calendar year figures, as of November 30, excluding: (1) hours funded by the various divisional regions and sections; (2) hours schedul for December, 1983.

3.8 Habitat Inventory

The Wildlife Habitat Inventory Program provides technical support to other program areas of the Fish and Wildlife Division. A primary objective is the provision of habitat supply and trend data as needed by various planning and management functions within the division as also needed by the associate minister of Public Lands and Wildlife to make periodical statements regarding the status of the fish and wildlife resource.

A provincial assessment of the status of the wildlife resource was initiated by the Wildlife Habitat Inventory Unit in April, 1983. This project has involved the following principal activities to date:

1. Preparation of a comprehensive plan for a provincial assessment of the status of the wildlife resource. This plan, in the final stages of preparation, outlines the rationale, objectives and strategies for conducting a systematic assessment of the status of 18 priority wildlife species and species groups throughout Alberta at mapping scales of 1:1,000,000 (16 mi. = 1 in.) and 1:250,000 (4 mi. = 1 in.).

2. Preparation of a wildlife hatitat region/subregion map of Alberta using ecological land classification criteria and prepared at the broad provincial scale of 1:1,000,000.

3. Continued preparation of key habitat requirement summaries for each priority wildlife species to support the provincial assessment and also to further development of a Wildlife Habitat Inventory and Assessment Manual.

4. Initiation of an evaluation of current habitat suitability (classes 1-4), current habitat trend and expected population carrying capacities for each of the 18 priority wildlife species/species groups throughout Alberta using the habitat region/subregion map of Alberta as a geographic framework.

A catalogue of wildlife habitat mapping projects in Alberta has been prepared to assist divisional staff in identifying wildlife habitat inventory information of potential use to program activities and responsibilities.

Advice and budgetary support has been provided to the wetlands habitat inventory project in the southern irrigation districts, conducted by Fish and Wildlife staff of the southern region.

On-going construction has been provided to other divisional resource inventory programs, including:

1. the 1:20,000 computerized base-mapping program for Alberta;

2. a proposal for a new vegetation inventory project to follow up the Phase III forest cover mapping project;

3. the Climate Inventory Program.

3.9 Research and Laboratory Services

Bighorn Sheep

A major die-off of sheep in southern British Columbia occurred in 1981 and spread into southern Alberta in the fall of 1982. The affected area included sheep ranges south of Crowsnest Pass and into Waterton National Park. The surviving herds (about 20-25 percent of the late 1970s' level) are now characterized by low production and low survival of lambs. Pneumonia was the cause of death, and in most cases an unusual bacterium, Pasteurella hemolytica type "T" (non-hemolytic variety), was isolated from the lungs. This bacterium has also been reported in domestic sheep and cattle. A major concern is that without precautionary measures there may continue to be major die-offs where bighorns and domestic stock intermix. Bighorn managers and veterinarians in the northwestern American states have recommended separation zones of one to several miles between domestic sheep and wild sheep in areas where bighorns are being maintained or re-established.

This winter a team of biologists and veterinarians will test the reverse transmissibility, virulence and pathogenicity of the type "T" Pasteurella in domestic sheep, using isolates from bighorns and cattle. The results may help to resolve a long-standing debate on the impacts of domestic stock on bighorns.

Intensive herd studies continue at Ram Mountain and a project was initiated at Sheep River in 1981 following a minor lungworm-related die-off in 1978.

At Ram Mountain, the impact of non-trophy hunting has been investigated since 1971. The isolated herd of approximately 100 animals has been able to sustain a ewe harvest averaging nearly eight percent of the winter population. The sheep herd has compensated for the ewe losses through high survival, high lamb production and early breeding of yearling ewes. The early breeding of yearling ewes appears related to the density of mature ewes present during the rut. In 1983, with the cessation of ewe removals and subsequent population increase, yearling ewes are no longer breeding. Orphan lambs show no differences in survival over non-orphans. Resident hunters harvest two to three trophy rams each year from the study area.

In coniunction with the Alberta Forest Service and the University of Alberta, a 40-acre prescribed burn was carried out on Ram Mountain in May, 1983 to determine whether fire is a viable tool for increasing sheep range. The population response will be monitored and vegetation regeneration recorded. Sheep were observed grazing on new grass shoots less than a month after burning. Plans are underway to burn additional areas on the mountain.

At Sheep River, tagging of sheep has allowed the movements of various herds into and out of the wildlife sanctuary to be documented. Coughing sheep are occasionally seen but no lungworm-related deaths

have been recorded. Lamb crops appear related to lungworm burdens of the respective dams, indicating the increased susceptibility to mortality of lambs born to ewes with high lungworm loads. This may be indicative of transplacental transmission of larvae. In 1982, the Sheep River winter range (all within the sanctuary) maintained about 150 sheep, and there is evidence of overcrowding and overutilization.

Caribou

Caribou studies are being conducted in two areas of Alberta: mountain and woodland caribou in the Edson and Grande Prairie regions (in the vicinity of Grande Cache), and woodland caribou in the Peace River region. The Peace River Wildlife section has radio-collared caribou from three different herds and currently is collecting data on seasonal movements, ranges and population dynamics. These studies are on-going to March 31, 1983.

The Berland-A La Peche caribou study near Grande Cache completed field data collection in October, 1983 and final data analysis and report writing is in progress. Preliminary guidelines for timber harvest on the caribou wintering grounds have been designed with the assistance and approval of British Columbia Forest Products and the Alberta Forest Service. This study has confirmed that caribou require large areas of mature lichen-producing conifer forests for winter habitat.

Two separate populations of caribou share portions of the same wintering grounds: a migratory mountain caribou population and a more

sedentary woodland population. There is a greater number of mountain (approximately 250) than woodland caribou (approximately 50).

Adult mortality and calf recruitment data suggest that the woodland population is stable and the mountain population is decreasing. Preliminary evidence indicates that predation is the limiting if not decline-causing factor. Illegal hunting does occur (nine known cases during the four-year study) and this problem will become greater as timber harvesting opens up more caribou range to vehicle access. A final report for the caribou study in west-central Alberta will be completed by April, 1983. Alberta Fish and Wildlife will continue to monitor these two populations of caribou to determine the effects of increased human activity and alteration of habitat.

Lab Services

The 1982 Incisor Bar Program was completed with a total of 7,312 animals aged. This included 1,879 elk, 950 moose, 1,777 mule deer, 1,316 white-tailed deer, 1,234 antelope, 138 non-trophy sheep and 18 goats. A total of 23 grizzly bears were also aged. The 1983 Incisor Bar Program was changed to include only elk, male and female moose authorizations, non-trophy sheep, goats, and male mule deer authorizations.

Eleven cougar carcasses were examined for information about parasites, condition and food habits and reproduction. Twenty cougar skulls were also examined for aging purposes.

A collection of approximately 120 deer lungs and jaws was obtained from the 1983 Camp Wainwright deer season for lungworm analysis and aging.

Approximately 400 found-dead wildlife specimens were distributed to museums or educational institutions and a number of specimens were prepared and analysed for pesticide levels.

3.10 Brooks Wildlife Centre

Pheasants

In the 1983 season, Brooks Wildlife Centre hatched 121,574 chicks, an increase of about 6,000 over 1982. This goal was achieved with the same number of breeders as in 1982, 5,600 hens and 518 roosters, but improved management and co-operative weather increased the productivity of the hatchery. The 1981 production was 110,327 chicks; 1982 115,156; and 1983 121,574.

Of the chicks produced, 11,560 went to 4-H members as day-olds, 9,132 went to private raisers as day-olds, 2,000 went to fish and game clubs at one day of age, 14,195 went to fish and game clubs at the age of six weeks, and 845 six- week-old birds were used for research purposes and six-week-old programs. The 22,692 birds distributed as day-olds involved 525 people. The 15,040 birds taken as six-week-olds involved 43 fish and game clubs. There were 7,320 chicks retained for 1984 breeders at the centre and the balance, about 75,000 chicks, were raised at the centre for release at 16 weeks of age. This fall, 64,859 of these mature birds were released from the centre.

Waterfowl

In 1983, about 190 Canada goose goslings were reared at the centre for transplant purposes. An additional 15 were wild-trapped to make up the total of 205 required for the program.

The trumpeter swan transplant program was extremely successful for production. Of the 17 eggs brought from Grande Prairie, 17 cygnets hatched. All were raised and transplanted to Elk Island National Park, with the exception of one cygnet which was held back for health reasons. Four wild-trapped Powell River/Alaska trumpeter swans were used as foster parents for the Grande Prairie cygnets.

Approximately 150 ducklings were reared at Brooks, mostly wood ducks.

Four students from the University of Alberta used the centre's facilities and birds to further their studies. One doctoral candidate raised a large number of ducklings to use in spring 1984. Two other students used the Canada goose flock, eggs and goslings for their master of science studies.

Hungarian Partridge

Approximately 195 Hungarian partridge were produced this year: 115 are being kept as breeders, 30 were sent to the Saskatchewan Wildlife Federation for propagation purposes, and 50 were released. In 1984, production should almost double, if the 1983 problems can be solved.

Quail

Production in the quail facility is on-going; 1983/84 production is estimated at 63,500 birds. Of these 52,000 will be used by the Wainwright peregrine breeding facility (Canadian Wildlife Service),

6,000 will go to the Black Diamond raptor facility, 1,500 will be used for parent stock, and the balance kept to feed birds at the centre for rehabilitation.

Raptor Rehabilitation

During 1983, 79 raptors were received for rehabilitation. These include a prairie falcon, a gyrfalcon, five merlins, six ferruginous hawks and five golden eagles.

Extension

In 1983, there were 2,188 visitors who were given tours, representing an increase of 133 percent. The visitors came from 10 provinces, 22 American states and 13 other countries. The largest group tour was 80 people.

In 1984, the highway signs directing visitors to the Brooks Wildlife Centre will be in place. The signs should increase the visitors by double, triple, or more. It is hoped that by summer 1984 there will be available a Brooks Wildlife Centre film for showing to groups, a slide show, a habitat display, a 4-H raiser display, and a storytime for younger children. Outdoors there will be a parking area, picnic shelter, upland bird display pens, a waterfowl display pond and a network of red shale paths in the public area. Indoors currently there is a panel display of all centre project areas, a diorama of a pheasant hen and chicks, mounted display birds, an egg collection and the film,

"Habitat, A Place for Wildlife". Outdoors at this time there is only the parking area and the picnic shelter.

The centre provides an excellent opportunity to reach and educate people about the activities and goals of Alberta Fish and Widlife. For many, this is the first and only exposure to the division and its programs.

4. FISHERIES

4.1 Sport Fisheries Management

Walleye

The walleye management program for 1983 was directed at the protection of natural populations, the enchancement of production and the expansion of distribution.

To protect natural existing stocks of walleye from overfishing, Blackett, Jackson, Kinnaird, Beaver and McGuffin lakes and the Owl River were closed to angling during the walleye spawning period in April and early May.

The walleye enhancement program was based on three elements: identifying walleye spawning runs as potential sources of walleye eggs to be raised in the fish hatchery; taking spawn, hatching, rearing and releasing walleye; and developing ponds to raise walleye fingerlings.

The following five sites were evaluated as potential sources of walleye eggs: Upper Chin Reservoir, Wabasca Lake, Cold Lake, Beaver Lake and Heart Lake. Cold Lake, Beaver Lake and Heart Lake were found to be unsuitable for providing a significant number of eggs. Upper Chin Reservoir and Wabasca Lake were found to have significant potential, and limited spawn taking operations were conducted.

Upper Chin Reservoir produced 5.4 million eggs, and 2.4 million were taken at Wabasca. These eggs were hatched in the Sam Livingston Fish Hatchery and produced 2.2 million fry. Of these, 320,000 were returned to Upper Chin Reservoir, one million were stocked in Wabamun Lake and 815,000 were stocked in dugouts to be reared to fingerling size. Survival to the fingerling stage was relatively poor and only 12,000 or 1.4 percent were recovered and subsequently stocked in Pigeon Lake.

To increase the production of walleye fingerlings, two raw water storage reservoirs near Vegreville and a reclaimed sewage lagoon near Lac La Biche have been taken over by the Fisheries Branch as rearing ponds. Water levels can be controlled in these ponds; with careful management it is estimated the ponds will be able to produce 1.2 million walleye fingerlings. The ponds near Vegreville will be brought into production in 1984, the pond near Lac La Biche in 1985.

Trout

In 1983, the trout management program was based largely on a lake stocking program and a change in fishery regulations on the Bow River to maintain a quality fishery that produces large trout.

A total of 4.2 million trout were stocked in 232 lakes and streams. The stream stockings were in streams barren of trout, with the objective of initiating a self-reproducing fish population. The streams involved were: Cougar Creek, Ford Creek, Little Elbow River, Baril Creek, Bishop Creek, Etherington Creek, Odlun Creek, Wilkson

Creek, Loomis Creek in Kananaskis Country; and Burnt Timber and North Burnt Timber creeks, Upper Red Deer River and the Upper Blackstone River near Nordegg. Previous stockings in Bighorn Creek near Nordegg have resulted in a population of cutthroat trout being established. Sampling in 1983 confirmed the presence of several 25-30 cm (10-12 inch) cutthroat trout in Bighorn Creek.

The distribution of the number of lakes stocked by administrative region is as follows:

Southern Region	32
Central Region	46
East Slope Region	96
Northeast Region	38
Peace River Region	20
	232

The primary trout species used for stocking was rainbow with lesser numbers of other trout species. Following is a list of the species stocked and their numbers:

Rainbow Trout	3,417,700
Lake Trout	235,500
Cutthroat Trout	266,700
Eastern Brook Trout	267,100
Brown Trout	5,650
	4,192,650

Dickson Reservoir on the Red Deer River was stocked with 200,000 trout made up of 135,000 cutthroat and 65,000 rainbow. This stocking program is designed to take advantage of the initial high productivity experienced in new reservoirs and the low number of predators. It is expected that as the northern pike population increases, the stocking program will have to be terminated since trout cannot successfully compete with this major predator.

A new trout management program was initiated on the Bow River, with the objective of maintaining a maximum number of large trout to produce a quality river sport fishery. The new regulations require that all trout over 40 cm (16 inches) be released back to the river. A special project carried out on the Bow River had found that the numbers of large trout were decreasing rapidly. In order to maintain their numbers and to ensure anglers could have the experience of catching a large trout, the regulation of releasing all large trout was implemented.

The catch-and-release project on the North Ram River was continued in 1983; however, because of low fish populations few anglers used the system. Only slightly more anglers used the river in 1983 over 1982, but the trout that were caught and released were much larger in size. The catch-and-release program will be continued and the fish population is expected to increase because of it.

Perch

During 1983, 10 lakes were stocked with 211,300 yellow perch by transferring adults and juveniles from lakes with strong populations. The perch were put into seven lakes to start new populations, and into three lakes that had experienced a severe winterkill.

Public Access

In 1982, a program to develop basic public-access facilities to fishing

areas, including sanitary maintenance, was initiated. The 1983 program completed 11 sites on stocked lakes. Eighteen sites have been completed since the inception of the program. Site development includes land hardening by gravelling and the installation of toilets and garbage facilities. Maintenance of the sanitary facilities during the maior fishing season of May to September is contracted out.

A program to improve public access to the Bow River was continued in 1983 with the development of two walk-in sites. A site approximately 28 km east of Calgary and on the north side of the Bow River (just opposite the Highwood River), was developed as a walk-in site with a parking lot located about 1.5 km from the river. A site approximately 48 km east of Calgary and on the north side of the Bow River, was also developed as a walk-in site with a parking lot about 1.5 km from the river.

McKinnon Flats, approximately 38 km east of Calgary and on the north side of the river, was purchased for public access to the Bow River. This site will be developed in 1984 and will provide parking, sanitary facilities and a boat launch on the river, with approximately 3 km of river bank made accessible to anglers.

The acquisition and development of sites on the Bow River in 1983 now brings the number of public access sites between Calgary and Carseland to a total of five.

4.2 Commercial Fisheries Management

Many Alberta lakes are managed to accommodate both a sport and a commercial fishery. The main target species in the commercial fishery is whitefish. Northern pike, tullibee, lake trout, perch and walleye are also taken for commercial purposes but in considerably less volume than whitefish.

Protection is afforded game fish species by establishing low production quotas, regulating the mesh size of gill nets, using depth limits and closing areas of water frequented by game fish during the commercial fishery. The methods described have proven to be most beneficial in the sport fish management program.

During 1982/83, 2,567 commerical fishing licences, including 772 zone commercial licences and 1,795 zone fisherman licences were issued. This was an increase of 698 over the previous year's total. These numbers are expected to remain stable due to the recent freeze on entry into the commercial fishing industry. The freeze on licensing is an interim measure pending the establishment of a new commercial fishing licence system for Alberta. When the new licensing system is introduced it will be possible to reduce the numbers of commercial fishermen, to ensure adequate income opportunities within the commercial fishery and to maintain a more evenly distributed flow of fish to the market. The reform of the present licensing system is regarded as a major step toward the objective of maintaining a viable commercial fishery in the province.

From the 102 lakes open to commercial fishing during the 1982/83 fishing season, the catch was 2.4 million kg of fish, with a value to fishermen of $1.8 million. This was an increase of approximately 135,000 kg of fish over the previous year's catch. International market prices were somewhat lower due to competition with ocean fish products and freshwater fish from other areas. However, the value to the fisherman increased by $163,213 because of more fish being sold in Alberta. A variety of initiatives are being taken to strengthen the marketing of Alberta fish in the province.

4.3 Fisheries Biological Services

Walleye previously introduced into Pigeon Lake were sampled in January, 1983 to assess growth rates relative to age. Three-year-old walleye resulting from the 1979 introductions averaged 453 mm in fork length, and two-year-old fish resulting from the 1980 introductions averaged 384 mm in fork length. In June and July of 1983, an additional 11,632 borrow pit-reared walleye were introduced into Pigeon Lake.

Traps were set in Cold Lake (Long Bay) to intercept the spawning migration of walleye to collect eggs for the hatchery. The movement of spawners occurred one day before the traps were set and as a result small numbers of adults and eggs were obtained. The eggs were used in laboratory experiments at the O.S. Longman Building.

Laboratory experiments on the incubation and hatching of walleye eggs revealed that eggs incubated under the low water temperatures that occur in spawning grounds in lakes as well as streams are detrimental to the production of "swim-up," the walleye young of the year. Hatchery incubation of eggs under controlled water temperatures would bypass this critical stage.

Marie Lake walleye and northern pike implanted with sonic and radio tags in September, 1982 were tracked in the spring of 1983 to locate shoreline spawning grounds. Radio-tagged fish tracked by fixed-wing aircraft while the lake was partially ice-covered delineated the

location of a shoreline walleye spawning ground. There was limited success with sonic-tagged fish. Water temperatures recorded at the spawning site revealed that Marie Lake walleye spawn at a low water temperature (6 C) and the eggs incubate under low water temperatures (6 to 10 C). The low water temperatures on the shoreline spawning grounds would account for the low walleye recruitment in Marie Lake.

Investigations into the Owl River (Lac La Biche) walleye populations began in 1983. The location and extent of beaver dams within the system was documented in this initial phase.

4.4 Fish Culture

Alberta was self-sufficient in the production of trout stock for 1983. All eggs collected and cultured were taken from either cultured brood fish or wild stocks.

Allison Brood Trout Station was officially opened September 16, 1983 by the Honorable Don Sparrow, associate minister of Public Lands and Wildlife, and by the Honorable Fred Bradley, minister of Environment. The station is fully operational but is undergoing minor, yet significant, improvements to its winter water supply at present. Upwards of five million trout will be produced annually to enhance fishing opportunities for Albertans and visitors.

The official sod turning ceremony for the Cold Lake Fish Hatchery took place September 19, 1983, coincident with initiation of site construction at the hatchery. This winter a road to the site will be completed, the site will be cleared and levelled, lake pipelines will be installed and effluent waste ponds will be constructed. By summer 1984 the contract for construction of the hatchery will be let. Completion of the new hatchery will be in spring 1985, with the introduction of rainbow trout and walleye eggs. The hatchery is designed to incubate two million, 10 cm rainbow trout and approximately 25 million walley fry. Walleye ponds at the site are expected to rear about 200,000 walleye fingerlings. Other ponds off-site are anticipated to rear another 1.2 million fingerlings.

Egg production from Raven Brood Station contributed 2.1 million trout for planting in 1983, including 200,000 held over for yearlings. Trout stock reared and held at Sam Livingston contributed eggs for another one million trout fingerlings. A culture biologist was added to the staff and this has enabled the identification and resolution of recurring culture problems such as supersaturation and low oxygen levels in rearing ponds. In addition, vitamin dietary supplements to combat cold winter temperatures have contributed significantly to egg survival. Investigations are now concentrating on improvements in egg survival, and in growth and lake survival through environmental and genetic manipulation of brood stock. Other investigations of brood fish carrying capacity, survival and pond maintenance in plastic vinyl as opposed to clay bottom ponds will result in improved fish and egg survival because of improved pond hygiene. A side benefit has been a reduction of staff time on pond maintenance. Reshaping and lining ponds with vinyl to improve water flow has been given a top priority as soon as funds allow.

Species composition of hatchery trout planted in 1983 was 3.4 million rainbow trout, 235,500 lake trout, 266,700 cutthroat trout, 267,100 eastern brood trout and 5,650 brown trout. Production of fish by weight (47,623 kg/104,990 lbs.) was lower than the peak year 1982 but represents a high average for other peak years. A major production contribution of the hatchery also was the rearing of approximately 10,000 mature replacement brood rainbow trout for Raven and Allison brood stations.

Brown trout eggs were not collected from the Bow River in 1982, in order to conserve that stock. Brood brown trout retained at Allison and Sam Livingston Fish Hatchery did not mature in the expected numbers in 1982. A significantly larger number of brood stock will mature in late 1983 and enable an improved brown trout egg collection for planting in 1984.

Water temperatures at Allison are hampering brown trout egg production, but on-going adjustments to the groundwater supply system and winter water recirculation will soon greatly improve trout egg production from brook and brown trout and other species at this station. Allison brood station has produced significantly more brook trout eggs in 1983 for 1984 than was planned or required.

Cutthroat trout egg stock was again obtained from wild stocks in Job (Wilson) Lake.

Lake trout were collected from Cornwall Lake in September, 1983. Unfortunately, a serious trout virus, infectious pancreatic necrosis (IPN) was identified and confirmed in the parent stock. Upon confirmation of the virus' presence all lake trout eggs (approximately 425,000) were destroyed to prevent the spread of the disease. Consequently there will be no lake trout plantings in 1984.

The division is reviewing alternative lakes from which lake trout eggs can be collected. At least two, Peerless and Swan lakes, will be investigated for egg collection and disease assessment in 1984.

Sundance Rearing Station on Lake Wabamun, acquired in 1983, was renovated in the fall of 1983 and is now rearing yearling rainbow trout. It is anticipated this facility, which is operating as a production pilot plant, will initially rear approximately 300,000 yearlings annually.

Further examination of the Clearwater site near Rocky Mountain House for the development of a major trout yearling rearing station was completed. Discussions with Nova Corporation also established the availability of the necessary waste heat and the continued interest of the company in the project. However, the project has been suspended because the acquisition of Sundance Rearing Station alleviated the need for rearing yearling trout.

Aquaculture in the private sector in 1983 remained similar to 1982 with approximately 1,500 licences issued. Trout stocks appeared to be available to fish farmers in most of the province early in the season, although not as readily available as some would wish. The Peace River area remains one region lacking trout. However, a fish supplier in northern British Columbia is expected to fill this need in the future.

4.5 Fisheries Habitat

Development

Just over $525,000 was spent under the Buck for Wildlife program on the enhancement and maintenance of fisheries habitat during the 1982/83 fiscal year. A total of 22 projects was funded (table 21) and a number of projects brought up to a state of readiness for implementation in 1983/84.

Table 21

1982/83 FISHERIES BUCK FOR WILDLIFE PROJECTS

Project	Region*	Monies Spent ($)	Type of Project
McVinnie Reservoir	S	164	Reservoir Maintenance
Stonehill Lake	S	1,300	Reservoir Maintenance
Taber Fish Pond	S	294	Fish Barrier Maintenance
Heningers Reservoir	S	882	Reservoir Maintenance
McQuillan Reservoir	S	3,475	Reservoir Maintenance
Anderson's Dam	C	8,112	Reservoir Maintenance
Fallentimber Creek	C	9,029	Stream Protection
Kerbes Pond	C	3,176	Lakeshore Protection Reservoir Maintenance
Mirror Reservoir	C	245	Reservoir Maintenance
South Dickson Trout Pond	C	140,253	Reservoir Construction
Windsor Lake	C	893	Reservoir Maintenance
Beaver Creek	ES	2,633	Stream Protection
North Raven River	ES/C	4,180	Stream Protection
Prairie Creek	ES	25,970	Stream Protection
Bathing Lake	ES	5,032	Lakeshore Protection
Raven River	ES/C	111,767	Stream Protection
Crooked Creek	ES	54	Stream Protection
Pedley Reservoir	ES	4,430	Reservoir Maintenance
Sulphur Lake	PR	79,924	Lake Stabilization
Bonnyville Town Pond	NE	32,127	Reservoir Improvement
Lloydminster Pond	NE	11,889	Reservoir Development
Boyle Pond	NE	85	Reservoir Maintenance
Subtotal		445,914	
Program Administration and Manpower		79,475	
Total		525,389	

* S - Southern
C - Central
ES - East Slopes
PR - Peace River
NE - Northeast

The following is a summary which provides a short description of projects receiving Buck for Wildlife funds in 1982/83:

A. Southern Region

1. McVinnie Reservoir

Water was purchased from the Lethbridge Northern Irrigation District to supply water.

2. Stonehill Lake

Larger capacity culverts were installed on the outlet canal to Stonehill Lake to prevent washouts created by inadequate culvert capacity and to facilitate access to the north side of the lake.

3. Taber Fish Pond

Reconstruction of the fish barrier to the pond inlet was required to prevent the introduction of undesirable fish species. The reconstruction was carried out in co-operation with Alberta Environment.

4. Heningers Reservoir

Gravel was spread on the dam face to control water seepage.

5. McQuillan Reservoir

Repairs to the inlet canal were completed in co-operation with Coaldale Fish and Game Club. Club members provided volunteer labor and Buck for Wildlife funds were used for equipment rentals.

B. Central Region

1. Anderson's Dam

The spillway was upgraded in order to minimize the dam washing out on this stocked reservoir.

2. Fallentimber Creek

Streambank fencing was carried out on two quarter-sections of land on this new watercourse added to the streambank fencing program.

3. Kerbes Pond

Maintenance to the spillway and dam was carried out to protect the integrity of the structure. A section of property line fence surrounding the reservoir was also relocated.

4. Mirror Reservoir

Water levels in the reservoir were brought up by the Mirror Fish and Game Club. Club members provided labor and pumping equipment and Buck for Wildlife funds were used to pay for the fuel.

5. South Dickson Trout Pond

Construction of a dike and isolation of a 160-acre pond within the Dickson Dam Reservoir was undertaken through co-operation with Alberta Environment and Alberta Transportation. Technical difficulties delayed completion of the pond water control structure until 1984/85.

6. Windsor Lake

Willows were removed from the shoreline to reduce potential flooded debris problems when the lake level increases to its full supply level.

C. East Slopes/Central Region

1. North Raven River

Maintenance of 32.6 km of streambank fencing on 16 quarter- sections was completed.

2. Raven River

New streambank fencing was carried out on five quarter-sections of land along the watercourse. Maintenance of streambank fencing on another eight quarter-sections was also completed.

D. East Slopes Region

1. Beaver Creek

Maintenance of approximately 10 km of streambank fencing on five quarter-sections was completed.

2. Prairie Creek

New streambank fencing was carried out on two quarter-sections and maintenance of 19.8 km of fencing on another seven quarter sections was completed.

3. Bathing Lake

A 0.5 km fence was constructed around the lake to protect the lakeshore from livestock grazing activities.

4. Crooked Creek

Maintenance of an existing streambank fence on one quarter- section was completed.

5. Pedley Reservoir

Materials were purchased for repairs to the spillway to be carried out during the 1983/84 fiscal year.

E. Peace River

1. Sulphur Lake

A low level sheetpile weir was constructed in co-operation with Alberta Environment on the outlet of the lake to stabilize lake levels. This will enhance the overwintering survival of stocked trout.

F. Northeast Region

1. Bonnyville Town Pond

An existing pond situated in the town of Bonnyville was deepened to improve the fish habitat for stocked trout.

2. Lloydminster Pond

In co-operation with Alberta Environment, an engineering consultant was retained to investigate the technical feasibility of constructing a reservoir at one of a number of sites situated southwest of Lloydminster.

3. Boyle Pond

Gravel was placed across the emergency spillway to facilitate vehicle access.

In 1983/84 a total of 35 projects are being funded (see table 22). The following summary provides a description of these Buck for Wildlife projects:

A. Southern Region

1. McQuillan Reservoir

Funds have been allocated to purchase water from the Lethbridge Northern Irrigation District to maintain reservoir levels.

Table 22

1983/84 FISHERIES BUCK FOR WILDLIFE PROJECTS

Project	Region*	Budget Expenditure ($)	Stage	Status	Type of Project
McQuillan Reservoir	S	1,500	Maintenance	Progressing	Reservoir Maintenance
Medicine Hat Regional Park Pond	S	125,000	Construction	Progressing	Reservoir Development
McVinnie Reservoir	S	175	Maintenance	Completed	Reservoir Maintenance
Little Beaverdam Lake	S	60,000	Maintenance	Completed	Reservoir Maintanance
Anderson's Dam	C	230	Maintenance	Completed	Lakeshore Protection
Boehlke's Pond	C	205	Maintenance	Completed	Lakeshore Protection
Coronation Pond	C	210	Maintenance	Completed	Lakeshore Protection
Fallentimber Creek	C	250	Maintenance	Completed	Stream Protection
Kerbes Pond	C	6,000	Maintenance	Completed	Reservoir Maintenance
Mirror Reservoir	C	100	Maintenance	Completed	Lakeshore Protection
North Raven River	C/ES	12,310	Maintenance	Completed	Stream Protection
Raven River	C/ES	10,800	Maintenance	Completed	Stream Protection
South Dickson Trout Pond	C	10,000	Construction	Delayed	Reservoir Development
Ware Creek	C	1,250	Maintenance	Completed	Stream Protection
Windsor Lake	C	625	Maintenance	Completed	Reservoir Maintenance
Bathing Lake	ES	35,700	Construction	Completed	Lake Stabilization
Beaver Creek	ES	735	Maintenance	Completed	Stream Protection
Crooked Creek	ES	100	Maintenance	Completed	Stream Protection
Elk Creek Pond	ES	100	Construction	Delayed	Reservoir Development
Open Creek Reservoir	ES	29,000	Maintenance	Completed	Reservoir Maintenance
Pedley Reservoir	ES	76,000	Maintenance	Completed	Reservoir Maintenance
Prairie Creek	ES	4,200	Maintenance	Completed	Stream Protection
Swan Lake	ES	4,500	Construction	Progressing	Lake Improvement
Figure 8 Lake	PR	100	Maintenance	Completed	Lakeshore Protection

(continued on next page)

Table 22 (continued)

Project	Region*	Budget Expenditure ($)	Stage	Status	Type of Project
Heart River	PR	100	Maintenance	Completed	Stream Protection
Sulphur Lake	PR	80	Construction	Completed	Lake Stabilization
MD of Peace Ponds	PR	97,400	Construction	Progressing	Rservoir Development
Moonshine Lake	PR	3,000	Maintenance	Progressing	Lake Aeration
Namepi Creek Reservoir	NE	100	Maintenance	Progressing	Reservoir Maintanance
Shuster Lake	NE	100	Maintenance	Progressing	Lakeshore Protection
Westlock Borrow Pit	NE	100	Maintenance	Progressing	Lakeshore Protection
Bonnyville Pond	NE	770	Construction	Completed	Reservoir Improvement
Mann Lakes	NE	80,000	Construction	Progressing	Lake Stabilization
Paddle River Pond	NE	36,000	Construction	Progressing	Reservoir Development
Subtotal		596,740			
Program Administration and Manpower		115,000			
Total		711,740			

* S - Southern
C - Central
ES - East Slopes
PR - Peace River
NE - Northeast

2. Medicine Hat Regional Park Pond

Construction of a pond suitable for trout stocking is currently underway in a regional park situated in Medicine Hat. Construction of the project is being carried out in co-operation with the city.

3. McVinnie Reservoir

Water was purchased from the Lethbridge Northern Irrigation District to supply water.

4. Little Beaverdam Lake

The old spillway on the outlet of this project had eroded severely and needed repair. A new spillway was constructed to ensure the continued existence of this stocked waterbody.

B. Central Region

1. Coronation Pond, Boehlke's Pond, Mirror Reservoir

Maintenance was completed on approximately 7 km of existing fencelines constructed around these stocked reservoirs.

2. Fallentimber Creek

Maintenance of approximately 2 km of streambank fencing.

3. Kerbes Pond

Spillway erosion during spring 1983 necessitated further maintenance works to protect the integrity of the dam structure.

4. South Dickson Trout Pond

Construction was carried over from 1982/83 and is expected to be completed in 1984/85.

5. Ware Creek

Maintenance of approximately 5 km of streambank fencing.

6. Windsor Lake

Maintenance was completed on approximately 2 km of existing fenceline constructed around the reservoir. Efforts were also undertaken to control terrestrial weeds along the north side of the lake at the request of Alberta Agriculture.

C. Central/East Slopes Region

1. North Raven River

Maintenance of 32.6 km of streambank fencing on 16 quarter- sections.

2. Raven River

Maintenance of 24.8 km of streambank fencing on 13 quarter- sections.

D. East Slopes Region

1. Bathing Lake

A small earth-fill dam was constructed on the outlet of the waterbody to stabilize lake levels. This will maintain suitable overwintering habitat for stocked trout.

2. Beaver Creek

Maintenance of approximately 10 km of streambank fencing on five quarter-sections.

3. Crooked Creek

Maintenance of 0.7 km of streambank fencing.

4. Elk Creek Pond

Construction was delayed until 1984/85 because of technical difficulties. The project is being carried out in co-operation with Albert Transportation and the Alberta Forest Service.

5. Open Creek Reservoir

Spillway rehabilitation was completed at the request of the Dam Safety Branch of Alberta Environment. Rehabilitation work was completed in co-operation with the Design and Construction Branch of Alberta Environment.

6. Pedley Reservoir

Spillway rehabilitation was completed at the request of the Dam Safety Branch of Alberta Environment. The rehabilitation work was carried out in co-operation with the Design and Construction Branch of Alberta Environment.

7. Prairie Creek

Maintenance of 22.1 km of streambank fencing on eight quarter- sections.

8. Swan Lake

Scheduled for the winter of 1983/84, the project involves the placement of rock rubble in the outlet area of the lake to enhance the size of the limited lake trout spawning area.

E. Peace River Region

1. Figure 8 Lake

Maintenance of 1.5 km of existing fence.

2. Heart River

Maintenance of approximately 0.5 km of streambank fencing.

3. Sulphur Lake

A final invoice for construction completed in 1982/83 was paid off.

4. MD of Peace Ponds

The project scheduled for completion during the spring of 1984 and involving the excavation of a pond suitable for trout stocking, is being carried out in co-operation with the Municipal District of Peace and Alberta Environment.

5. Moonshine Lake

An aeration system was installed in the lake to improve overwinter survival of stock trout. The project is being carried out in co-operation with Alberta Recreation and Parks.

F. Northeast Region

1. Namepi Creek Reservoir, Shuster Lake, Westlock Borrow Pit

Maintenance of approximately 3.1 km of fence constructed around these reservoirs.

2. Bonnyville Pond

A final invoice for construction completed in 1982/83 was paid off.

3. Mann Lakes

The project is scheduled for completion during the winter of 1983/84 and involves the construction of a low-level sheetpile weir on the outlet of the lake system. The weir will stabilize lake levels and improve overwinter survival of native perch and pike. This project is being carried out in co-operation with Alberta Environment.

4. Paddle River Pond

Scheduled for completion during the winter of 1983/84 and involving the construction of a pond suitable for trout stocking, the project is being carried out in co-operation with Alberta Environment in conjunction with construction of the Paddle River Dam.

Inventory

The Fisheries Inventory Unit continued to refine its development of a provincial inventory program. A conceptual plan (figure 1 attached) was developed which details the various individual components of the fisheries inventory program, and how they are linked together. This will form the basis for consolidating existing information and collecting new information to produce a systematic fisheries survey of the province. The information provided by the survey forms a base from which fisheries managers can develop management activities.

The priority areas for fisheries inventory work were defined to account for the distribution of industrial activity, a major consideration not included in the existing priority plan. This will ensure that fisheries inventory information is available first in areas where people want to fish most, where highly valued sport-fish species exist, and now also where those species are most likely to be affected by industry. Fisheries managers will have the resource information

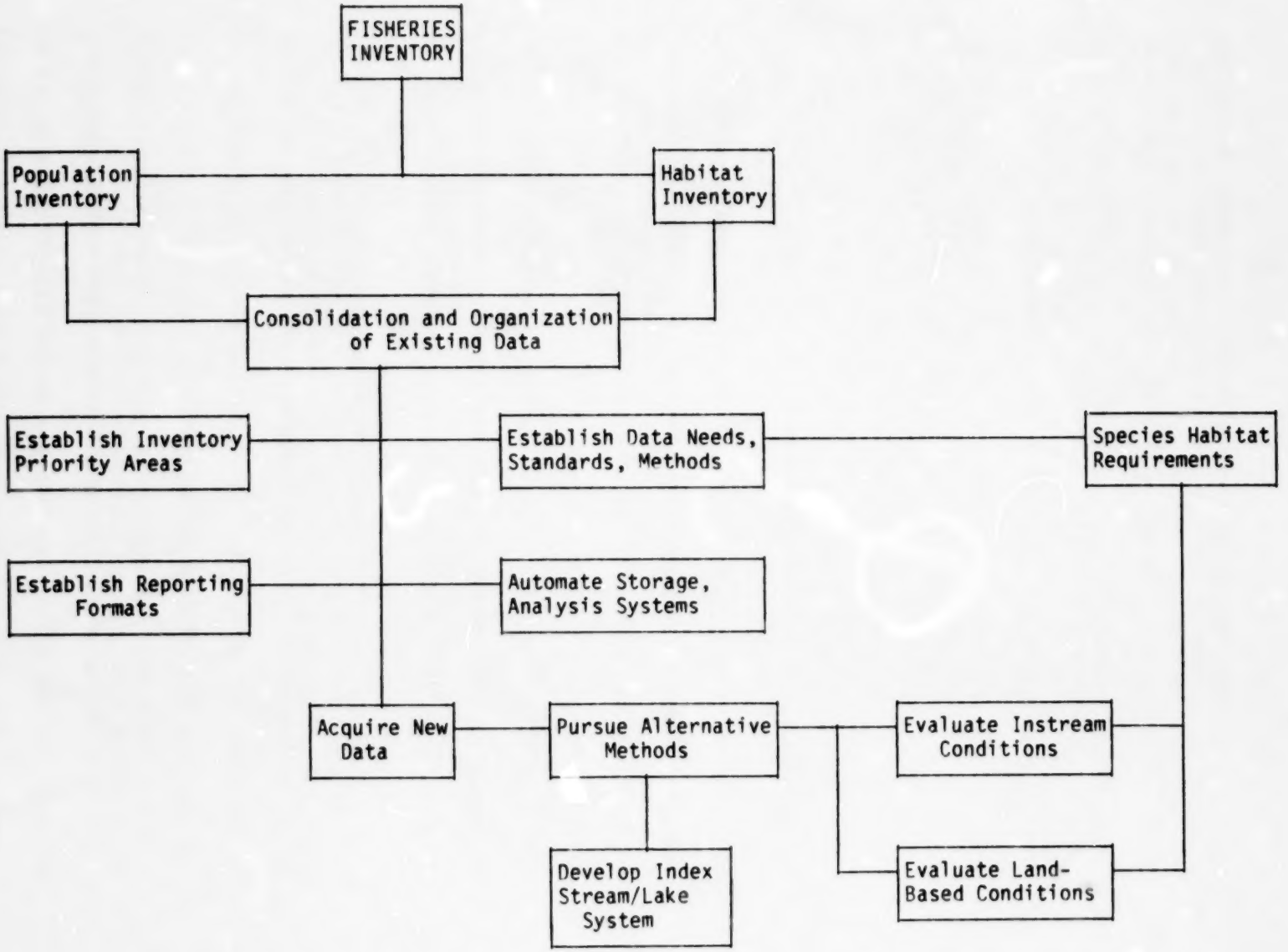

Figure 1. Components in the development of the fisheries inventory program.

required for comprehensive management in areas requiring the most urgent attention.

Data collection throughout the province is being standardized in terms of both the information collected and the methods used in order to ensure the efficient and effective acquisition of information. Manuals have been drafted for stream inventories, and outlines have been prepared for lake inventories. The manuals will provide guidelines for collections of fisheries inventory information made by Fish and Wildlife staff, environmental consultants and any other agency collecting fisheries resource information in Alberta.

New information from previously unexploited Fish and Widlife sources is being added to the fish resource map series, and existing information is being corrected with the assistance of regional fisheries biologists. Information from other sources will be added to ensure an accurate and current graphic display of Alberta's fish resources.

Stream and lake surveys have been conducted to collect three general types of fish resource information. These are fish species presence and abundance, fish sizes, and habitat quality. In the past year inventory information has been collected from 47 streams and river drainages and from 55 lakes throughout the province. This new information augments that already collected from approximately 900 streams (41,000 km) and 800 lakes (15 million ha).

5. ENFORCEMENT-FIELD SERVICES

During the past year all sections in the Enforcement-Field Services Branch were extremely busy. Of major importance was the work on proposals for rewriting of the Wildlife Act, the development of a Standards and Procedures Manual, significant investigations by Special Investigations and the addition of a training officer.

5.1 Standards and Operational Planning

The Standards and Operational Planning section continued to be responsible for the development of programs, procedures and guidelines, as well as evaluating and monitoring the cost effectiveness of all operational matters including the nuisance wildlife program, enforcement activities, wildlife damage fund and the possession of found-dead wildlife.

Nuisance Wildlife. The transition period of transferring responsibilities for nuisance wildlife control and/or prevention from the problem wildlife specialist to the district Fish and Wildlife officer is now over, and the result has been excellent.

Special emphasis was put on increasing wolf control as a result of large wolf populations and the resulting increase in landowner complaints.

The program relied on trapper education and incentives to increase harvesting, increased control action in chronic wolf depredation areas by Fish and Wildlife officers, and attempts to make wolf hunting more attractive to non-resident and non-resident alien hunters through licence fee reductions. The program was successful with the result that approximately 1,000 wolves were taken. This is approximately twice the number taken in previous years.

Enforcement Activities. This section organized and co-ordinated the division's November helicopter program which used two helicopters for enforcement checks throughout the province on a planned schedule. As in previous years the program has been closely monitored and a report on its effectiveness and cost efficiency will be forthcoming. This program appears to have been well accepted by the public, based on the nature of the comments received from various resource users contacted during the program.

Wildlife Damage Fund Program. A total of 30 applications for compensation under the Wildlife Damage Fund was received by December 21, 1983. One application has been rejected to date and several are still under review.

Possession of Found-Dead Wildlife. In total 1,031 applications for permits to possess found-dead wildlife were processed with the result that 897 applications were approved, 133 rejected and one cancelled.

The Standards and Operational Planning Section is also responsible for issuing export permits and collecting fur tax for approximately 90 percent of the total fur production in the province. As of December 31, 1983, $60,453.17 had been collected.

A new responsibility has been added to this section recently: identifying the need for and co-ordinating the development and presentation of training courses, as well as evaluating the effectiveness and cost efficiency of the courses for the entire regional field services staff. Effective December 15, 1983, a permanent training officer position was transferred to the section; it is anticipated this will greatly enhance the training capabilities of the division.

The following training programs for the regional field services staff have been conducted to date:

Pesticide Chemical Applicators Course. Five courses were conducted throughout the province with 63 Fish and Wildlife officers attending. The course was designed to provide training in the handling and use of poisons for the control of nuisance wildlife and to qualify officers for the licences required for authorizing the legal use of the poisons.

Nuisance Wildlife Courses. One nuisance wildlife course was conducted for 13 Fish and Wildlife officers from Alberta, three problem wildlife specialists from the state of Washington, and one problem wildlife

specialist from Saskatchewan. The course was designed to provide training to new officers in nuisance wildlife control and prevention techniques as well as to provide training and instruction in investigating nuisance wildlife complaints and claims.

Boat Safety Course. One boat safety course was held with 13 Fish and Wildlife officers and two fishery technicians attending. The course was designed to provide field services staff with training in water safety and in the proper operation of prop-driven and jet-driven boats.

Firearm Safety Course. One firearm safety course was conducted with 10 Fish and Wildlife officers attending. The course was designed to provide new staff with training in the safe and efficient use of firearms as well as developing a knowledge of safe handling procedures for all firearms an officer may encounter in day-to-day duties.

5.2 Regulations

Rewriting the Wildlife Act and significant input into its discussion paper were the major activities during the past year.

The division continued its participation in the 10-member Boat Safety Check Committee. Staff participated in sportsman shows at Calgary and Edmonton at which the boating safety message was presented to over 100,000 visitors. District offices distributed printed boating safety material to the public, and officers inspected 5,799 vessels carrying 15,091 passengers. The inspections resulted in the detection of 812 boating safety violations; charges were laid in 151 of these cases, with the remaining instances resulting in warnings issued to the vessel owners or operators.

Having been in operation for seven years, the co-operative Boat Safety Check Program has undoubtedly contributed to a significant increase in the compliance with boating safety regulations (89 percent in 1983 as opposed to only 56 percent in 1977) and the reduction in the proportion of vessel-related drownings which, during the same period, was reduced from 48 to 26 percent of the total number of drownings in the province.

5.3 Special Investigations

During the 1983 calendar year, the Special Investigations Unit grew from one to two full-time positions and expanded its capabilities through contract positions. Working relationships with agencies outside the province were expanded to address more effectively the problems presented by highly mobile resource users.

In March an undercover investigation into illegal hunting and trafficking activities in the Calgary area was concluded. This resulted in 38 charges under the Wildlife Act against eight persons. Two organized groups were involved and each included one treaty Indian who used his treaty privileges to cover the hunting activities. All eight individuals were convicted of various offences and received fines totalling $5,280.00.

An investigation in the Edmonton area was concluded when one person was charged with trafficking and illegal possession of wildlife as well as weapons violations. The result was a fine of $6,500 and prohibition from possessing a firearm for a period of three years.

An investigation in the Hinton area resulted in an individual being fined $800 for trafficking in wildlife (grizzly hides).

In the Bonnyville area an individual was fined $1,250 for trafficking in walleye caught under the authority of an Indian domestic licence.

After several years of operation the Special Investigations Unit has gained a considerable amount of knowledge into the methods used in illegal activities. The successes of this unit over the past year are positive steps toward dealing more effectively with more serious abuses.

5.4 Forensic Science

The number of cases handled by the forensic lab remained about the same as last year. As mentioned in the 1982/83 report, a number of other agencies make use of the Fish and Wildlife lab. These agencies continued to submit materials, and requests have been received from sources such as the University of Alberta and wildlife agencies in Saskatchewan and Montana.

Results from the University of Alberta for analysis of element composition of bighorn sheep bones to determine geographic origin is showing promise. The program is to be continued for another year.

Further work was done on determining species-specific protein differences for a variety of tissues from game and non-game animals. Species differences seen in initial studies seem to be consistent. Collecting and analysing tissue samples from all native animal species to increase sample sizes to acceptable levels is continuing.

Samples were collected at the Wainwright deer hunt for a project on determining time of death. The samples have been analysed but the data has yet to be tabulated.

Tables 23 through 30 summarize Fish and Wildlife enforcement data for prosecutions initiated between April 1 and December 31, 1983. Thus far, 4,101 cases were initiated of which 2,269 have been concluded.

Table 23 summarizes the types of prosecutions handled to December 31, 1983. As in the past year there were more wildlife than fisheries violations detected. Statistics in 1983 show an increase of 14.9 percent in detected violations over 1982.

Table 24 indicates the type of prosecutions processed by act and regulation. Violations under the Wildlife Act and Alberta Fishery Regulations accounted for 60.3 percent of all detected violations.

Table 25 identifies those cases under the Wildlife Act where convictions have been obtained. The average fine in these cases has increased by $17.88 over 1982 to $87.98. This average is still lower than the $92.15 attained in 1981. The highest average was $206.18 for hunting during unauthorized times.

Table 26 indicates the pleas entered for all cases. Of the 2,380 cases concluded, 94.5 percent admitted guilt either by pleading guilty in a court appearance or by way of the voluntary payment ticket. In 1982, 98.8 percent entered guilty pleas.

Table 27 summarizes the convictions resulting in licence suspensions. Of the cases concluded to date, 184 resulted in suspensions.

Table 28 illustrates the age breakdown of hunters required to take the compulsory hunter training test. The 30-34 age group comprised the most frequent violators of regulations that require testing as opposed to the 25-29 age group in 1982.

Table 29 indicates the age group and the frequency of violations for each in wildlife, fisheries and other violations.

Table 30 indicates the occupations of violators against wildlife, fisheries and other statutes. Once again labor and trades were the largest groups of violators, closely followed by the unemployed.

Table 31 is a breakdown of all occurrences received to date and shows an increase of 4,465 over 1982.

Table 23

TYPES OF PROSECUTIONS

Type	Frequency	Percent
Wildlife		
Big game	573	14.0
Upland bird	89	2.2
Migratory bird	53	1.3
Miscellaneous wildlife	911	22.2
Subtotal	1,626	39.7
Fisheries	1,223	29.8
Other		
Liquor	564	13.7
Small vessels	169	4.1
Off-highway	291	7.1
Highway traffic/motor vehicle	62	1.5
Criminal Code	54	1.3
Litter	48	1.2
Miscellaneous	64	1.6
Subtotal	1,254	30.5
Total	4,101	100.0

Note: Includes all prosecutions concluded and still pending as of December 23, 1983.

Table 24

PROSECUTION BREAKDOWN BY ACT

Act	Frequency	Percent
Alberta Fishing Regulations	1,196	29.2
Wildlife Act	1,276	31.1
Liquor Control Act	564	13.7
Small Vessels Regulations	169	4.1
Off-Highway Vehicle Act	291	7.1
Game Hunting Regulations	290	7.1
Migratory Birds Convention Act/Regulations	53	1.3
Other	262	6.4
Total	4,101	100.0

Table 25

COMMON CONVICTIONS UNDER THE WILDLIFE ACT

Section		Frequency	Percent	Average Fine ($)
29(1)	Loaded firearm	124	26.1	75.00
24(2)	Occupied land	31	6.5	75.00
46(1)	Fail to carry licence/tags	70	14.7	10.00
20	Illegal possession	30	6.3	143.67
19	Unauthorized times	38	8.0	206.18
18	No licence	42	8.9	139.17
	Other	140	29.5	81.96
	Total	475	100.0	87.98

NOTE: Total fines for all 475 convictions under the Wildlife Act equal to $41,790.00.

Table 26

PLEAS ENTERED FOR CHARGES AND DISPOSITION OF CHARGES

Plea	Frequency	Percent
Guilty	1,390	33.9
Voluntary ticket	858	20.9
Not guilty	21*	0.5
Pending	1,719	41.9
Unknown	113	2.8
Total	4,101	100.0

Disposition	Frequency	Percent
Guilty	2,259	94.9
Not guilty	11	0.5
Withdrawn	110	4.6
Total	2,380	100.0

* Of the 21 individuals pleading not guilty, 12 were found guilty by the courts, eight were found not guilty and one had the charge withdrawn.

Table 27

CONVICTIONS RESULTING IN LICENCE SUSPENSION

Type of Suspension	Frequency	Average Fine ($)	Average Age (Years)
Big game*	104	194.66	33.9
Bird game*	40	81.50	30.0
Fisheries	9	111.11	37.5
Fur/Other	13	115.38	32.1
Migratory bird	18	74.72	28.8
Total	184	148.64	32.6

* Mandatory hunter test requirement applies.

Table 28

AGE BREAKDOWN OF OFFENDERS REQUIRED TO TAKE HUNTER TEST

Age (Years)	Big Game		Bird Game		Total	
	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.
Under 20	3	2.9	3	7.5	6	4.2
20 - 24	13	12.5	9	22.5	22	15.3
25 - 29	15	14.4	17	42.5	32	22.2
30 - 34	35	33.7	2	5.0	37	25.7
35 - 39	15	14.4	5	12.5	20	13.9
40 - 44	6	5.8	0	0.0	6	4.1
45 and over	17	16.3	4	10.0	21	14.6
Total	104	100.0	40	100.0	144	100.0

Table 29

AGE BREAKDOWN FOR ALL CONVICTIONS

Age (Years)	Wildlife		Fisheries		Other		Total	
	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.
15 and under	1	0.2	0	0.0	0	0.0	1	0.0
16 - 19	52	8.4	94	10.2	72	10.1	218	9.6
20 - 24	121	19.4	225	24.3	205	28.8	551	24.4
25 - 29	148	23.8	169	18.3	138	19.4	455	20.1
30 - 34	103	16.5	115	12.4	116	16.3	334	14.8
35 - 39	85	13.7	88	9.5	59	8.3	232	10.3
40 - 44	46	7.4	68	7.3	41	5.7	155	6.9
45 - 49	23	3.7	60	6.5	34	4.8	117	5.2
50 - 54	13	2.1	34	3.7	25	3.5	72	3.2
55 - 59	18	2.9	31	3.4	9	1.3	58	2.6
60 and over	12	1.9	41	4.4	13	1.8	66	2.9
Total	62[illegible]	100.0	925	100.0	712	100.0	2,259	100.0

Table 30

OCCUPATIONAL BREAKDOWN FOR ALL CONVICTIONS

Occupation	Wildlife		Fisheries		Other		Total	
	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.
Professional	26	4.2	37	4.0	21	2.9	84	3.7
Managerial	26	4.2	26	2.8	24	3.4	76	3.4
Contracting	7	1.1	5	0.5	9	1.3	21	0.9
Farming	38	6.1	17	1.8	29	4.1	84	3.7
Trades	132	21.2	150	16.2	146	20.5	428	18.9
Transportation	3	0.5	16	1.7	5	0.7	24	1.1
Services	48	7.7	108	11.7	56	7.9	212	9.4
Sales	8	1.3	9	1.0	4	0.6	21	0.9
Operative	47	7.6	43	4.6	65	9.1	155	6.9
Armed Forces	3	0.5	4	0.4	1	0.1	8	0.4
Clerical	1	0.2	12	1.3	6	0.8	19	0.8
Labor	96	15.4	127	13.7	111	15.6	334	14.8
Homemaker	2	0.3	28	3.0	2	0.3	32	1.4
Student	33	5.3	62	6.7	45	6.3	140	6.2
Retired	5	0.8	20	2.2	6	0.8	31	1.4
Unemployed	60	9.6	168	18.2	64	9.0	292	12.9
Miscellaneous	27	4.3	33	3.6	37	5.2	97	4.3
Unknown	60	9.6	60	6.5	81	11.4	201	8.9
Total	622	100.0	925	100.0	712	100.0	2,259	100.0

Table 31

SUMMARY OF OCCURRENCES

		Frequency	Percent
Problem wildlife			
	Beaver	4,020	20.9
	Black bear	1,296	6.7
	Grizzly bear	77	0.4
	Wolf	163	0.8
	Fox	71	0.4
	Coyote	265	1.4
	Cougar	30	0.1
	Skunk	868	4.5
	Migratory bird	352	1.8
	Deer	226	1.2
	Elk	51	0.3
	Moose	32	0.2
	Other ungulates	22	0.1
	Other mammals	204	1.1
	Raptors	91	0.5
	Other	826	4.3
	Subtotal	8,594	44.8
Found wildlife			
	Road kills	1,901	9.9
	Diseased/injured	1,454	7.6
	Found dead wildlife/ Applications to keep	1,031	5.4
	Other found dead wildlife	346	1.8
	Other found wildlife	776	4.0
	Subtotal	5,508	28.7

(Continued on next page)

Table 31 (continued)

		Frequency	Percent
Enforcement			
	Environmental	244	1.3
	Night Hunting	338	1.8
	Other Unauthorized Hunting	832	4.3
	Closed Season	950	4.9
	Licensing	390	2.0
	Trespass	359	1.9
	Trafficking	109	0.6
	Illegal Possession	108	0.6
	Other enforcement	661	3.4
	Subtotal	3,991	20.8
Other Occurrences			
	Native Harvest	62	0.3
	Miscellaneous	1,032	5.4
	Subtotal	1,094	5.7
	Total	19,187	100.0

6. OPERATIONS FIELD SERVICES

It has been a busy year for Fish and Wildlife personnel involved in field operations activities. Increasing demand for general services has put new pressures on manpower and intensified management planning.

A great deal of manpower time was committed to the Boy Scout World Jamboree. Officers from all regions of the province were assigned to security programs involving dangerous animal control; in addition, they provided coaching for shooting range activities. Such community relations involvements are on-going for Fish and Wildife officers; however, these programs do not seem to draw the kind of recognition given to many special programs undertaken by other agencies. Some 41 officers participated in the event.

In co-operation with the department's Public Affairs Branch and the division's Information Branch, senior staff from Operations were instrumental in the development and direction of the division's new information program that highlights Lanny McDonald as a spokesman for recognition of the wildlife resource. Initial assessment of results indicates that the television commercials had a positive impact on the general public; field officers report widespread support from sportsmen and landowners. As a component of the effort to increase the level of public awareness a major program directed toward increasing respect for landowners was undertaken in the Lethbridge region. In relation to this successful endeavor to encourage hunters to obtain permission when hunting on private land and respect landowner rights, this branch would

like to congratulate the Foremost Fish and Game Association and the Southern Alberta Sportsmans Association which provided leadership and commitment to the campaign.

During National Wildlife Week there was a province-wide visit of approximately 700 schools to increase wildlife awareness among school children. Contact with the public in major population centres was accomplished by setting up manned displays in shopping malls. Some 14,000 people visiting the display in Edmonton were able to obtain information from professional, technical and law enforcement personnel.

Another major attempt to improve public awareness involved the implementation of new regulations to increase the profile of the Bow River trout fishery. The program involved the preparation of an information brochure, large signs at boat-launch sites, newspaper articles and booth displays. While not yet fully assessed, the program demonstrates the division's commitment to improve communications with the public. This type of effort will be continued as an important method of increasing regulation compliance. During the year, the province's Outdoor Observer presentation was updated and filmed. The film should result in a more effective delivery as it will no longer be necessary to ship specialized video equipment in order to view the program.

The foregoing does not cover all of the community relations efforts of Field Services personnel. Biologists, technicians and officers spend

hundreds of hours attending meetings, working with local governments, talking to special-interest groups and providing information for local news media.

In southern Alberta a major effort to inventory and assess wildlife habitat within 12 irrigation districts was undertaken. This could have a significant effect on the long-term protection of important pheasant and waterfowl habitat. In addition, there has been a significant achievement by Biological Services personnel in the development of integrated resource plans. Several thousand land-and-water-use referrals have also been processed in response to industrial applications. The scope and magnitude of demands in this area is such that manpower is pushed to the limits.

In conjunction with Alberta Forest Service, a controlled burn to improve bighorn sheep range was undertaken on Ram Mountain. Initial reports indicate the burn was successful and that bighorn utilization of the area occurred within a short period. Evaluation of the project is on-going.

7. PUBLIC INFORMATION AND EXTENSION SERVICES

7.1 Conservation Education

The Public Information and Extension Branch comprises two essential elements: conservation education and conservation hunter education. Branch staff promote fish and wildlife management policies and programs as well as the hunter education program.

In 1983 the branch continued its commitments with the preparation of regulation summaries, public presentations, brochure and display development, and acknowledgment of telephone and written public inquiries. Close liaison was maintained with the Alberta Fish and Game Association, private sportsmen's clubs, and school groups to foster an understanding and appreciation of the division. In addition promotional activities were shared with the department's Information Centre and various organizations of other jurisdictions, e.g. Alberta Forest Service, Canadian Wildlife Service and the Royal Canadian Mounted Police.

Of special note was the branch's provision of technical services in the preparation of fish and wildlife brochures and displays for Kananaskis Country. The branch also worked in conjunction with the Bureau of Public Affairs in the official opening of the Allen Bill Pond in Kananaskis Country and the Allison Creek Fish Hatchery plus the sod-turning ceremonies for the Cold Lake Hatchery.

Efforts progressed smoothly to expand the peregrine falcon interpretive program in downtown Calgary and Edmonton. This project is shared financially and manpower-wise with Alberta Government Telephones (AGT). In 1983 the successful re-establishment project for the peregrine falcon, an endangered species, was viewed by over 23,000 Albertans at the AGT downtown offices.

A new campaign to bring wildlife interests into the school system came about with the introduction of Project WILD. This new project highlights fish and wildlife interests across a broad spectrum of school topics and features examples of Alberta fish and wildlife.

Three films were completed in 1983. An enforcement-public relations film, "The Outdoor Observer", portrays the responsible sportsman. A long-standing commitment on moose management, "Wildlife for Tomorrow", was successfully completed. The third film, on pheasants and habitat, "Habitat - A Place for Wildlife", involved co-production with CBC-Edmonton.

Final arrangements were made on two brochures in the current "Introduction to Wildlife" series. One was a new publication on large rodents and rabbits while the other was an update and revision on cold water fish. Both are to be distributed before March 31, 1984.

Two major displays, Fitting the Future Together, and The Responsible Sportsman, were completed and put into service. These displays and other divisional materials were used by staff at numerous public

functions including sportsmen's shows, National Wildlife Week, the Calgary Stampede and in the Information Centre.

The division's conservation hunter education program received international recognition from the National Rifle Association as the best all-round program for 1983. This award is a reflection of the dedication and hard work provided by volunteer instructors, many of whom are members of fish and game clubs.

An agreement was completed to purchase 320 acres of the McKinnon Ranch east of Calgary along the Bow River. This property will be used as a fishing access site while also incorporating hunter education activities and interpretive trails.

Numerous lectures were given by branch staff on a number of topics highlighting fish and wildlife programs, policies and resource-related topics. Close liaison on these programs was maintained with the department's Information Centre.

National Wildlife Week, the second week in April, involved contact with over 700 schools. Close liaison was maintained with the division's field staff to enhance public awareness of fish and wildlife in Alberta. Additional promotional activities were conducted with staff and Fish and Game members throughout the province.

7.2 Hunter Education

The Alberta hunter education program was offered throughout Alberta in 1983. Courses were delivered by approximately 800 volunteer instructors in schools and communities throughout the province. During the past year, 360 courses were held involving 13,110 students, of whom 4,675 participated in the outdoor camp program. Interest remained strong in this program both in the schools and with sportsmen's clubs.

The division received international recognition for having the best conservation hunter education program in North America. The National Rifle Hunter Safety Award was received on behalf of the Alberta government by former Associate Minister J. E. (Bud) Miller along with Assistant Deputy Minister Dennis C. Surrendi, representing the Fish and Wildlife Division, and Lionel Dunn from the hunter education program.

The Alberta hunter education program was judged to be the best in 1983 out of 50 American states and 10 Canadian provinces. The Alberta program has been instrumental in its leading role with the developing of educational programs, notably the hunter education manual. The information in this teaching manual has been adopted by other government agencies, and in fact was the basis for the National Rifle Association's own instructional manual.

In achieving this award, the Fish and Wildlife Division wishes to recognize and offer special thanks to the numerous fish and game organizations in Alberta for their time and devotion offered to the

program. A greater effort will be made to incorporate more involvement of the Fish & Game Association in delivering more hunter education programs in 1984.

During 1983 the hunter education staff, along with numerous volunteer instructors participated in the World Scout Jamboree, July 4 - 16, 1983 in Kananaskis Country. The special attraction of WJ-83 was the hunter trap shooting program for upwards of 9,000 scouts which was co-ordinated by the hunter education instructors. In addition a hunter safety trail, a pellet gun program and a wildlife habitat program were provided. According to staff from the National Rifle Association, this was the largest shooting program ever attempted. The success of this event was a tribute to the Alberta staff and the volunteer instructors who donated considerable time on their own to make this activity a major success.

During 1983, the compulsory violator testing program handled 125 people who had lost their hunting licences and privileges with charges laid under the Wildlife Act. Each Fish and Wildlife district office scheduled the testing days with the Edmonton and Calgary offices doing the bulk of testing programs. All testing was done by hunter education staff working closely with the respective enforcement staff.

In-service firearm training seminars were conducted for Fish and Wildlife division officers. Again, division shooters participated in individual and team events during the Canadian police championships. Firearm courses were also provided to provincial and federal park

officers. Liaison was maintained with the Solicitor General's office, major city police forces and the RCMP.

Of special merit were the efforts with the Foremost Fish and Game Association and the Southern Alberta Outdoorsmen on a major campaign to enhance landholder-sportsman relations. The 1983 campaign resulted in more land being opened to hunting. Excellent rapport has resulted with this program and the use respect operation of the Fish and Wildlife staff, landholders and local sportsmen's clubs.

8. HABITAT PROTECTION

During 1983, the Habitat Protection Branch continued its heavy involvement in the areas of integrated planning and resource protection. The branch represents the Fish and Wildlife Division's interests on all land-use matters involving various government agencies and private industry. The branch is responsible for ensuring that fish and wildlife habitat concerns are incorporated into the orderly planning of oil and gas, timber, hydro, mining, agricultural and other developments. The branch participated in the review of various land-use proposals with a view toward mitigating and/or enhancing the effects of these developments.

8.1 Planning

Through its involvement in the integrated planning process, the Habitat Protection Branch provided Fish and Wildlife Division input to various integrated resource plans. Several plans were completed, including Castle River, Lakeland, Brazeau-Pembina, Rocky-North Saskatchewan, Jean D'Or Prairie, and Nordegg-Red Deer River. Fish and Game Association members provided a valuable contribution to these, and further public consultation is scheduled over the next year. The branch also participated in land-use plans.

During 1983, the Minister approved the Blackfoot Provincial Grazing Reserve Development, following a thorough planning process involving both public and government representatives. Clearing was started this winter and Fish and Wildlife habitat staff are involved in on-site development work. The development will result in the overall improvement of wildlife habitat as well as benefits for grazing and recreation.

The branch actively participated in the preparation of the South Saskatchewan River Basin Planning Program currently being carried out by Alberta Environment, providing instream flow values to protect the fisheries in the Red Deer, Bow and Oldman rivers. The values were incorporated in Alberta Environment's water balance model in which many water-use scenarios were examined. The results were analysed by the Habitat Protection Branch to determine impact upon the fisheries. A decision made by Alberta Environment in late December will require the

Fish and Wildlife Division to continue its involvement throughout 1984. Additional scenarios will be examined and better analytical tools will be used to provide more reliable input to the planning exercise.

There were significant advances made in 1983 in the field of technologies for determining instream flow needs for fish. A consultant was hired by Alberta Environment to examine the various methodologies currently used by other jurisdictions in western Canada and the Pacific Northwest. A final report is expected early in 1984. The Habitat Protection Branch carried out studies on the tributaries to the Highwood and Sheep river systems to develop biological preference curves which are used in conjunction with the instream flow incremental methodology (IFIM). A contract was let to a consultant by Alberta Environment to collect hydraulic, fish habitat and biological data for preference curves for rainbow trout and Rocky Mountain whitefish in the Highwood River. The data will be analysed under another contract in 1984. Software packages were developed to assist the Fish and Wildlife Division in analysing the large volume of data generated by the IFIM PHABISM model. In 1984 there will be further development and refinement of IFIM in both field data collection and micro-computer software packages for analysing data.

8.2 Protection

The branch continued heavy involvement in land-use referrals. Major effort was exerted in addressing water-quality problems in coal development along with Alberta Forest Service and Alberta Environment. Fish and Wildlife input was provided toward the planning and construction of major developments such as the Union Oil Project and the Gregg River Resources Project. In addition, the branch is co-ordinating the division's interests on an intergovernmental review team established for the proposed Slave River hydro project.

The branch participated in a co-operative study with the Canadian Petroleum Association to determine mechanisms for enhancing fish and wildlife habitats in conjunction with oil and gas development. A consultant has been retained and the results of the investigations will be available by spring 1984.

The branch also continued its key involvement with the Alberta Forest Service in the St. Regis project. The project will serve as a model of land use that incorporates both the needs of timber harvesters and wildlife interests. Completion of the project and a report are scheduled for December, 1984.

A major involvement of Habitat Protection staff was required for the public hearings into the Amoco/Lodgepole blow-out. Several key staff were involved in the initial on-site investigations and the determination of mitigation requirements for the clean-up. Habitat

staff also represented the division as expert witnesses at the public hearings.

In 1984 the branch will continue its major involvement in the preparation of integrated resource plans and in representing the division's interests in all land-use activities affecting fish and wildlife habitat (for example, referrals). The branch will also be increasing its involvement in interdepartmental studies on agricultural land expansion and related drainage investigations, as well as preparing a provincial habitat protection strategy which will outline the division's future direction in addressing land-use concerns affecting fish and wildlife habitat.